

JOURNAL
OF
THE MILITARY SERVICE INSTITUTION
OF THE
UNITED STATES.

"I cannot help plead to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because Peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—SHERMAN.

VOL. XXVI.

MARCH, 1900.

NO. CIV.

Prize Essay.*

IN WHAT WAY CAN THE NATIONAL GUARD BE MODIFIED SO AS TO MAKE IT AN EFFECTIVE RESERVE TO THE REGULAR ARMY IN BOTH WAR AND PEACE.

BY COLONEL EDWARD E. BRITTON, SUPERNUMERARY (INFANTRY),
N. G., N. Y.

THE wording of the subject as given for this essay appears to assume that the National Guard (the active militia) should be so constituted as to form an effective reserve for the Regular army and that it has not proven to be such up to this time.

For the benefit of those who may have given the subject no more than passing consideration, it may not be out of place to briefly review the militia question from its inception and summarize its position at the present time, before touching on a plan for the modification of the National Guard to accomplish the desired purpose.

The early colonists became of necessity hardy and well trained, as individuals, in the use of fire-arms against the savages and in colonial wars.

In anticipation of the Revolution, the Provincial Convention of Maryland, followed by other Colonies in 1774, declared

* Board of Award, Governor Theodore Roosevelt, New York, Major General Thomas H. Ruger, U. S. A., Major General Joseph W. Plume, N. G., N. J.

"that a well regulated militia, composed of the gentlemen freeholders and other freemen, is the natural strength and only stable security of a free government," and proceeded to put the declaration into effect by organizing to offset the presence of the British regular troops, increased in numbers to overawe or, if necessary, to force the colonists into submission to tyrannous decrees of British authority. Such was the first suggestion of an organized militia, which throughout the war of the Revolution rendered assistance to the Continental armies when called upon to do so, although the unreliability of their service was, on occasions, embarrassing to the Revolutionary commanders. With an experience of the oppression of the British Regulars in colonial times, a military system similar to that which prevailed in European countries, placing as it did at the arbitrary disposal of their rulers large standing armies withdrawn from productive industries, was regarded with disfavor. A large standing army in the grasp of an unscrupulous executive was considered a menace to the safety of a popular government, so a contrary principle was established and the Constitution of the United States (amended in 1789) made to declare that "a well regulated militia being necessary to the security of a free state, the right of the people to keep and bear arms shall not be infringed." The rights and obligations of the general and State governments concerning the militia are stated or implied in the Constitution in the following, as among the powers granted Congress:

"To provide for the common defense."

"To raise and support armies, but no appropriation of money to that use shall be for a longer term than two years."

"To make rules for the government and regulation of the land and naval forces."

"To provide for calling forth the militia to execute the laws of the Union, suppress insurrections and repel invasions."

"To provide for organizing, arming and disciplining the militia and for governing such part of them as may be employed in the service of the United States, reserving to the States respectively, the appointment of the officers and the authority of training the militia according to the discipline prescribed by Congress."

The Constitution provides that "No State shall, without the consent of Congress * * * keep troops or ships of war in time of peace."

In 1783, when the Continental armies were disbanded, about 1000 men were retained in service until the establishment of the War Department by Act of Congress, August 7, 1789. On the same day Washington, in a message to the Senate, first refers to the militia under the new government, as follows: "Along with this object (the preservation of peace and tranquility on the frontiers) I am induced to suggest another, with the national importance and necessity of which I am deeply impressed; I mean some uniform and effective system for the militia of the United States. It is unnecessary to offer arguments in recommendation of a measure on which the honor, safety and well being of our country so evidently and so essentially depend; but it may not be amiss to observe that I am particularly anxious it should receive as early attention as circumstances will admit, because it is now in our power to avail ourselves of the military knowledge disseminated throughout the several States by means of the many well instructed officers and soldiers of the late army, a resource which is daily diminishing by death and other causes. To suffer this peculiar advantage to pass away unimproved would be to neglect an opportunity * * *." It is worthy of note that the same peculiar advantage of opportunity for improving the militia service exists to-day, as the result of the Spanish War. Notwithstanding that the impression is general with the public and among the rank and file of the National Guard that the militia is principally a State affair, in the foregoing extracts from the Constitution it appears conclusive that the organization of the militia is clearly a concern of the general government, Washington himself using the term "the militia of the United States."

It was not until three years later, in 1792, that a militia law was finally adopted. It made compulsory the enrollment and the performance of military duty on the part of every able-bodied citizen, between the ages of 18 and 45; that he shall "be constantly provided with a good musket or firelock, of a bore sufficient for balls the 18th part of a pound, a sufficient bayonet and belt, two spare flints and a knapsack, a pouch with a box

therein to contain not less than 24 cartridges" or a "good rifle, knapsack, shot pouch and powder horn, 20 balls and a quarter pound of powder" and that "Each commissioned officer shall be armed with a sword or hanger and spontoon.*" The law carried with it no appropriation and for other apparent reasons it was soon discovered to be impossible of practical operation. In 1808, it was amended to provide for an annual appropriation of \$200,000 for arms and equipments. The population was then about 6,200,000. This amount was increased by further amendment in 1887, to \$400,000—population about 62,000,000. Notwithstanding two score urgent messages (see Appendix A) commencing with Washington, recommendations of Secretaries of War and army officials of the highest rank and consideration of the subject by committees of Congress, the original features of the Act of 1792, in all their mustiness of a bygone age, have never been repealed and to-day constitute the militia law of the United States of America. Neglect by the general government led to the organizing in the different States, commencing in the early "Forties," of volunteer State militia companies which finally developed, to all intents and purposes, what is known as the National Guard, but in reality about as many kinds of militia systems as there are States and Territories.

During the few years preceding the call for troops for the Spanish War, it was what might be termed "taken for granted" that the National Guard, as auxiliary to the Regular army, was ready for service. This belief was not confined to the general public, whose only basis for judgment were impressions gathered from the appearance of bodies of the National Guard on parade presentably uniformed, equipped with well-appearing equipments, armed with some sort of arms and marching on pavements in even ranks. As late as 1889, the report of one of the high officials of the Government (civilian) takes occasion to commend "the discipline and efficiency of the National Guard. It was evidenced by their appearance on the Centennial Celebration in New York on the previous April 30th and the promptness and celerity with which their concentration was effected." An army officer of the highest rank officially reported that the result of the experiment of concentrating these

* A demi-pike, with a hook, to arrest malefactors.

troops was highly satisfactory ; also " It may be safely said that at no previous period have the volunteer militia of the country, when yet untried in battle, been in so high a state of preparation for active service." The comparison with previous periods is the saving clause. The conditions implied by these views were not justified by practical experience in the Spanish War, although assumed by the War Department in the spring of 1898, when tenaciously insisted upon by National Guard commanders and their friends in Congress.

At that time the position of the National Guard as a military body was distinctly nondescript. The Constitution vests in Congress and in no other authority the power relating to war, insurrections and invasions, armies, militia, protects each State against invasion and domestic violence (when requested by State authorities). It is therefore difficult to determine why any custom or State law should require that the National Guard be called into service of the United States only through the intermediation or by consent of a Governor. The State and Territorial laws varied in the matter of provision for State troops being called into service of the United States and some of them are acknowledged by their own authorities to be in many respects contradictory and imperfect. Twenty-one make no provision nor reference to United States service. Twenty-eight made provision, of which number, in nine it was by implication only ; four solely through the intervention of the respective Governors ; one restricting such service to a period of 90 days, and one to six months ; although the United States law (1792) provides for nine months. One restricts, by definition, the purposes for which troops furnished under call of the national government may be used. The existing U. S. militia law (of 1792 and amendments) contains no proviso requiring the President (under authority of Congress) to address his call to any Governor. The contrary is the case. It empowers him " to issue his orders for that purpose to such officers of the militia as he may think proper." As there existed no national militia under his orders, organized in contemplation of the requirements of war service, but in its place forty-nine separate and distinct State and Territorial armies, organized under contradictory and restrictive laws, the Presi-

dent directed his call to the Governors for the quotas apportioned to their respective States. The National Guard organizations being considered as ready for service, request was made that they be given the preference. The expectation of readiness for service was not realized, as experience showed and the reports of army officials to the Secretary of War testify. (See Appendix B.)

In some States the Constitutions required that a certain number of active militia be always kept within the respective States, so new organizations were made. Whole bodies of State troops held back because fearful of their disruption as then organized, and their numerical designations changed; some bargained with, if not dictating to, the United States authorities, as to terms and conditions. A few officers and men claimed (in private, at least) that they never entered the service to go to war. A few officers (in private, at least) feared examination as to qualifications to hold their commissions, doubtless with good cause in many cases. A liberal percentage of the men were rejected as physically unfit. There were neither arms, equipments, uniforms nor equipage enough to go round. What there was included many varieties of patterns, and quantities were worn out and unserviceable. At the outbreak of war, the States had an aggregate force under arms, as reported to the War Department, of nearly 114,000 officers and men. The President's first call, April 23, 1898, was for 125,000 volunteers. Of the 124,804 volunteers in service at the end of May, it is safe to say that more than half had had no previous military training whatever, not ever even fired a gun. What was there in the country, at the outbreak of the war, to resist the invasion of a disciplined, thoroughly trained and equipped enemy, had the war been with any European power, other than degenerate and exhausted Spain?

All this is properly chargeable to the prevailing militia system, or rather, lack of system, and not to the willing, patriotic men who responded so promptly in multitudes to their country's call.

The excellence of material we possess in the citizen soldier is conceded. Drawn from every avocation, naturally intelligent, averaging a better education than the Regular or volunteer of

any other country, he is independent, resourceful and full of "grit." The martial spirit of our people is unquestionable. It is evidenced by the amount of time, energy and money devoted to the National Guard by its members in times of peace, with slight substantial encouragement by the general government, with only a moderate allowance in many States and none at all in some.

The general excellence of a few bodies of the National Guard, such as the 10th Pennsylvania, should be considered only as an example of the high state of efficiency and usefulness to which a militia organization can be brought. As for the individual guardsman, several hundred of them have recently made creditable records as officers in our Regular and Volunteer armies.

But the good will, courage and physical strength of the individual does not of itself make a soldier, fit for active service. Not even when supplemented by instruction in manual drill and cramped movements in an armory. He must know how to take care of himself in camp and on the march. What to do and what not to do, in order to withstand the fatigue of military life and keep out of the hospital. He must comprehend the drudgery which forms such a considerable part of his duties in active service. He must become familiar with his weapon and be made to understand its use and care as well as that of all his other belongings. He must be practiced in firing. The few weaklings will shrink from exertion outside of holiday parades, but the desirable recruit will welcome it.

In the writer's opinion, more good men are kept out of the ranks of the National Guard, because this service is considered to be of slight importance as a military organization, but rather a kind of State military police, handy to back up the Sheriff, than by the prospect of a soldier's real work. There could be no objection to the latter, if the former were the main feature.

When the standard of efficiency shall be recognized in the community as high, and thereby its true public utility become known, its appeal to the American youth will not be in vain: "Here is a duty and a recreation combined, the most desirable and least expensive you can find. We are a free and peaceable people; there is no compulsory military service here and as a

nation, we do not seek war ; but war may come and the flag need defenders ; join this service, learn your duties and if ever you have to go, you go as a trained soldier, perhaps as an officer ; otherwise you may go as a conscript ; you are a young man seeking associates ; here they are, all developing their manhood in the best of all schools, that of the soldier ; here you get a good muscular training ; you learn the lesson of obedience to superiors and, as you rise in grade, your duty to subordinates ; here you find method and system brought to its highest point ; these lessons are invaluable in your everyday life ; to be a good soldier is to be a good man ; it is an honor to be in or to have graduated from the military service ; beside all this, there are the exhibition drills and parades for our friends, with an occasional dance and many social features ; but remember, we are soldiers first and foremost." My impression is that it will be exceptional when men enlisted on such a basis will be found backward in meeting promptly and cheerfully the call of duty during the time of service and if at a later day, the necessity should arise of greatly increasing the military forces to resist a powerful enemy, a valuable body of men will be at hand from which to select instructors of recruits and officers of minor grades, as well as for higher rank from amongst those who show special aptitude for command.

The National Guard is established in forty-nine States and Territories, in thirty-eight of which it is known by that term and in the others as "State Guard," "State National Guard," "Volunteers," "State Troops" or "Volunteer Guard." In 1897, preceding the Spanish War, its aggregate organized strength, as reported to the War Department, was 114,362. There were 9196 commissioned officers, consisting of 58 generals, 916 general staff officers, 8222 regimental field, staff and company officers, and 105,166 enlisted men, as follows: 20,455 non-commissioned officers, 4644 musicians and 80,067 privates. Of these forces, 4978 were cavalry, 5055 artillery and 100,179 infantry. The greatest strength was in New York, 13,902 and the least, 361 in New Mexico.

Thirty-one States held encampments, the highest percentage of attendance having been in Pennsylvania 98, and the lowest in Idaho 12, the average being 78 per cent. The number of

men liable to military duty in the United States is upwards of 10,000,000 (between 18 and 45 years of age, physically fit and not exempt). Five States had division organizations. In a few, the number of general officers was disproportionate to the strength of the organizations.

Company officers are elected by the rank and file in all States except one, Washington, in which the Governor appoints. In two, the election covers only the original commission as second lieutenants, other grades being filled by promotion from next lower grade. In seven States the election is for a limited period only, varying from one to five years. In eleven States and Territories no examination is required, either before or after receiving first commission. In a few in which examinations are required by law, none are had, the law not being enforced.

It is generally conceded that the system of electing officers is pernicious. Except the colonel commanding, it places every regimental officer, from second lieutenant to lieutenant-colonel, in a position in which, dependent on the votes of subordinates for promotion, popularity must sometimes be achieved at the expense of discipline and often bitter discord is engendered by the rivalries of regimental politics, from which it may require years to recover. It is doubtful if efficiency and discipline can ever be attained, as long as the elective system prevails.

The great desideratum in any plan of modification to make the National Guard a more effective force is, to the writer's mind, a system which will insure uniformity in all the States and Territories in organization, equipment, armament, instruction, discipline, forms, property issue and accountability, field exercises, staff work, etc., which with no unreasonable expenditure of money, nor drain on the time of men devoted to the productive industries of the country, will provide sufficient forces in the States for the maintenance of good order and at the same time be in readiness for mobilization under authority of the United States, to form with the Regular army the first line to "repel invasions" as well as to "execute the laws of the Union," which are the proper functions of the militia, according to the Constitution.

The matter of definiteness in the contract of enlistment and the agreement or understanding as to the duties required from

the militia should be considered as of equally high importance as in any contract between individuals. Unless clearly defined and understood, either the contract will not be entered into and thereby much valuable material lost to the service or confusion will result in its performance.

The active militia must constitute the great popular training school of soldiers, to furnish either from its ranks or its graduates, instructors and officers for the masses of raw levies of volunteers which must be put into the field, in the event of serious war. It must be remembered that in any army of 500,000 men, there are about 20,000 regimental and company commissioned officers, and about 105,000 non-commissioned officers. If these have had previous military training and experience, the efficiency of the force is secured in the shortest time and with the least friction and cost. If they are as ignorant as the last recruit, it means, in the beginning, at least, disaster and the needless sacrifice of thousands of lives through camp sickness and in action.

While the National Guard might be made into a really efficient force, it is unreasonable to expect it, as a body, to equal the performance of Regular troops, who derive their livelihood from the profession of arms. Members of the National Guard must be self-supporting, as they are not under pay, and no plan which requires from them over-burdensome duties can meet with success. Indoor drills and instruction, which take place after work hours, can always be had; also occasional field days.

There are plenty of ambitious officers and men who would undertake theoretical and text-book military studies and reading, if the proper course were pointed out to them. It is remarkable how many there are who with every desire to improve themselves, find no one to tell them of the existence of other subjects for study, than those found in the drill book in such a form as to be uninteresting.

The grand practical educator of line and staff officers and men, lies in the camp of instruction and its field manoeuvres. This should be annual and about two weeks in duration. One week gives too little useful time after deducting getting settled, on arriving and getting ready to leave, and in few cases could men devote more than two weeks. Any and all work which

can be done in armories, should not be left for the encampment. Troops should be thoroughly prepared to get the most out of the encampment training. The annual encampment should contain whenever possible, the entire body of troops in any State, and should be held in the State itself. The War Department should encamp with the State encampment, a body of Regular troops. Only those who have had practical experience, can know the advantages of this object lesson. Regular officers are not as a rule accessible to the enlisted men of the National Guard, but the non-commissioned officer and Regular private are there both in example and precept. The encampment should be a working camp, with no advance preparations beyond the space, except customary suitability as to drainage, water, etc. Pampering men with a ready-made camp, mess hall, and caterer, not only defeats utterly the purpose and usefulness of the camp, but stamps the occasion as a holiday affair. Men appreciate the "real thing," and enjoy it, in preference to the "make believe." The "make believe" disaffects those who know what the "real thing" should be and it gives wrong impressions to those who do not.

In the consideration of any plan for militia reorganization, it must be taken into account and the fact accepted, that a National Guard exists in the different States. Some of the officers and men, probably a small proportion, may be of poor material for a well instructed and disciplined force, but there they are, and they need not necessarily be interfered with. The rule of the survival of the fittest may be safely counted upon to replace them in time, with better men, as the character of the service demands. The creating of an entirely new force, such as a National Reserve, etc., would cause disturbance between the two bodies and would probably neutralize the efforts of each other. It were undoubtedly better to take the existing force as the basis for reorganization.

Without remedying the defects in the present system, the dividing of increased appropriations among the different States would be of no benefit to the present National Guard, beyond providing a better and more complete equipment and more National Guard of the same kind.

Following out the theory of the Constitution, the jurisdic-

tion over the militia is dual and joint, by both the National and State governments, and this kind of jurisdiction is thoroughly practicable. Each receives separate benefits, should each bear a just proportion of the burdens and be in a position to make sure that the desired results are forthcoming.

To the separate States properly belong the appointment of the officers and the training of the militia. To Congress, to provide for organizing, arming and disciplining them, and to prescribe the discipline by which they shall be trained by the States. While the Governor appoints the officers, it is the prerogative of Congress to see to it that the officers shall be properly efficient, as part of the discipline which Congress is authorized to prescribe. That position is clearly tenable. One of our recognized authorities on military organization has it: "Military discipline includes training and educating the soldier in all the duties of his profession and implanting in him that respect for authority which causes him to obey." "It cannot be obtained without good organization and thorough and continued instruction. It is the essential factor in preserving the zeal, spirit and confidence of troops under the depressing influence of defeat, as well as in restraining the excesses and preventing the demoralization which frequently results from victory. The mainspring of all true discipline is found in the respect of the subordinate for the superior. This can only be acquired and retained by the immediate superior so perfecting himself in his duties as to always be able to give instruction to his subordinates and to cause them to look up to him as a model in intellectual, moral and so far as possible, physical qualities. Combined with this must be, on the part of the superior, a respect for the rights and dignities of all his inferiors, down to the latest recruit." Congress should therefore prescribe the rules and restrictions under which officers may be appointed by the States and how they may be dismissed or relieved from duty, under certain conditions.

The States have hitherto borne by far the greater proportion of the expense of maintaining the militia. It is difficult to arrive at its exact cost, for the reason that the various State appropriations, which are known, are supplemented in some States by county and town allowances, the amount of which

cannot be accurately learned. The following figures are approximate, but fairly close :

Aggregate State appropriations, 1897 .	\$2,700,000
U. S. appropriation (divided among the States according to representation in Congress)	400,000
	<hr/>
	\$3,100,000

Total strength in 1897 of National Guard, 114,362, makes the appropriations of the States average per man \$23.60 and of the United States \$3.50, or little short of one-seventh of that of the States, the total appropriation per man being \$27.10, which is at the rate of less than 5 cents per annum per head of population defended. The cost of the United States army for the fiscal year ending June 30, 1897, was upwards of \$23,600,000, including only expenditures directly chargeable to maintenance of the military establishment, which was then about 23,900 officers and men present for duty. That is at the rate of about \$1000 per man per annum. The cost of maintenance of the Volunteer organizations of Great Britain is upwards of \$4,000,000 per annum ; about 12 cents per head of population defended.

A yearly appropriation by Congress for the militia of \$1,000,000 could not be considered excessive, if the States should co-operate in a new National Militia law which would insure a more effective force. Such coöperation would require the amendment of the militia laws in about all, if not all, of the States, but with a new National Militia law enacted and the date of its taking effect deferred for a sufficient period, time would be given for the States to change their laws to conform.

The writer suggests the following as the chief provisions of a new National Militia law, to replace that of 1792 and amendments, now in force :

That all able-bodied citizens between the ages of 18 and 45 years shall constitute the militia, subject to such exemptions as may be deemed proper and necessary.

That the militia be divided into two classes : the active and reserve militia ; the active militia to be known as the " Volunteer Militia of the United States," and to consist of the organ-

ized and uniformed military forces in the different States and Territories; the reserve militia to consist of all those liable to service, but not serving in the active militia.

That whenever authorized by Congress to order into the actual service of the United States any part of the militia, the President may first order out for service the active militia to the number so authorized, by command directed to the commanding officer of any portion thereof, in any State or Territory, provided, however, that in any State the Constitution of which requires that a force of active militia be kept within the confines of the State, he shall limit his orders to two-thirds of the active militia in such State. That no organization of the active militia be ordered into the actual service of the United States for a period exceeding one year.

That whenever it shall be necessary to call out any portion of the reserve militia, either to increase to their maximum strength any organizations of the active militia or to create additional organizations for the actual service of the United States, the same shall be done by volunteer enlistments, and should the number of these be insufficient, then next by means of draft or conscription, under such provision as may be made by Congress. Provided, that in the event of the organization of forces additional to those of the active militia, for the actual service of the United States, any member of the Volunteer Militia who may enlist or be commissioned as an officer in any such additional forces, may do so under furlough or leave of absence, as the case may be, from the active militia.

That the Governors shall be the Commanders-in-chief of the militia in their respective States and Territories, except when in the actual service of the United States. Any State or Territory, the militia laws of which shall conform to and are not inconsistent with the provisions of the Militia law of the United States, shall be entitled to and receive the full benefits of the appropriations made under the provisions of such law, but otherwise only forty per centum thereof (or no allowance, if a law containing such a provision could be passed).

That there be created a bureau of the War Department for the Volunteer Militia, the chief of which to be an officer of the Army of the United States, to be known as the Inspector-Gen-

eral of the Volunteer Militia. There to be detailed as inspectors of the Volunteer Militia, one line officer of the Army of the United States for each 5000 enlisted men enrolled in the Volunteer Militia, with headquarters at the capitals of States, as assigned by the President. No officer to be so detailed who has not served at least five years in the Army of the United States. All the records and reports relating to the militia to be kept in that bureau. It shall prepare and furnish to the Volunteer Militia all books of instruction and any and every blank form and book of record necessary and relating to the proper and systematic performance of the office duties and business of the Volunteer Militia or any subdivision or staff department thereof and regulations for its organization, equipment, arming, discipline and instruction as may be prescribed by the President under authority of Congress.

That the organizations forming the active military forces in the different States and Territories at the date of effect of the new law, such others as may be organized thereunder in any State or Territory and such persons as may enlist or be appointed or commissioned therein, to constitute the Volunteer Militia of the United States. The divisions, brigades, regiments, battalions, squadrons, troops, batteries, companies, signal and hospital corps as established in the different States and Territories at the time of the effect of the new law to become a part of the Volunteer Militia, but the Governor of each State or Territory shall, without unnecessary delay, change and continue thereafter the organization of divisions, brigades, regiments, battalions, squadrons, troops, batteries, companies, signal and hospital corps, so as to conform to the organization provided for under the new law or future amendments. Each Governor to have the power to alter, divide, annex, consolidate, disband or reorganize any portion of the active militia and create new organizations in his State or Territory in conformity to the organization provided for under the new law whenever, in his judgment, the efficiency of his forces will be thereby increased. The aggregate force of enlisted men of the active militia in any State or Territory in time of peace, fully armed, uniformed and equipped, shall not be less than one, nor more than three, per thousand of the population of such State or

Territory as determined by the last preceding decennial census, but the President in case of war, insurrection or invasion, when authorized by Congress, may increase the force beyond the said three per thousand and organize them as the exigencies of the service may require.

That the law prescribe the organization of divisions, brigades, regiments, battalions, squadrons, troops, batteries, companies, signal and hospital corps to conform as nearly as practicable to like organizations in the Regular army. Also provide for staffs of general officers.

That all officers be commissioned by the Governors of their respective States or Territories, but no one to be commissioned unless complying with the following conditions: Must be a citizen of the United States of the age of eighteen years and upwards. No person who has been expelled or dishonorably discharged from the military or naval service of the United States or of any State or Territory, shall be commissioned. A general officer at the time of his appointment, to be an officer in active service in the Volunteer Militia of his State or Territory of the grade of brigadier general (if appointed major general) or field officer and for five successive years immediately preceding his appointment, he must have been in active service in the military forces of his State as a commissioned officer; or if not in active service at the time of his appointment, to have had prior service of at least eight years in the military service of his own or other States as a field officer, or as a commissioned officer in the Army of the United States or in both combined. General officers to be appointed by the Governors of their respective States, without examination. Second lieutenants to be appointed by the Governors of their respective States or Territories, on nomination of a majority of the members of the troop, battery or company in which the vacancy exists, when approved by the commanding officer of the regiment, if part of one, or of the battalion or squadron, if not part of a regiment. In any regiment, squadron or battalion not part of a regiment, troop, battery or company, all vacancies among field officers, and troop, battery or company officers above the grade of second lieutenant, shall be filled by promotion of the officer next in grade. If such promotion be de-

clined, then by promotion to fall to the officer next in grade. Provided, that in case of the declination of promotion by the next in rank entitled thereto, the Governor may, on the formal request of a majority of the officers in the same organization junior to the rank and grade of the office in which the vacancy exists, fill such vacancy by the appointment of any person who shall have been honorably discharged from the Regular or volunteer army of the United States as a commissioned officer within two years, after not less than one year's service therein, or within three years from the active militia as a commissioned officer after not less than five years service therein. Vacancies among staff officers to be filled by appointment of the Governor, on nomination of their immediate commanders. Appointees to have had previous State or United States military service of at least two years, except medical, engineer and signal officers, judge advocates and veterinarians who shall have proper professional experience. Staff positions to be permanent except aides-de-camp on staff of a general, who may be rendered supernumerary on the request of their immediate commanders.

That before being commissioned in any grade except that of general officer, every officer to pass a satisfactory examination as prescribed by the President, before a board, appointed by the Governor or by his orders, as to his knowledge of military affairs and general knowledge and fitness for the service. On the failure of a second lieutenant to pass an examination for promotion, he shall, on recommendation of the examining board, approved by his immediate commanding general officer (or if there be no commanding general officer, then by the Adjutant-General of his State or Territory), be discharged from the service.

That in the creation of new organizations, the Governor shall appoint all officers, subject to examination as before prescribed.

That when a governor shall deem it for the good of the service, he may order any commissioned officer before an examining board, who shall inquire into his moral character, capacity and general fitness for the service, and on an adverse report, he may be discharged.

That the customary and proper provisions be made relating

to oaths of office, brevet commissions, supernumerary officers, resignations, retirements and discharges of officers.

That enlistments be made of properly qualified men for the period of five years, including chief musicians, drum-majors, chief trumpeters, veterinary sergeants, hospital stewards, artificers, privates of the hospital corps, cooks, farriers and blacksmiths, wagoners, mechanics and musicians; also for reenlistments, enlistment papers, transfers, dropping from rolls, taking up from dropped, discharges, etc.

That proper provision be made for the appointment of non-commissioned officers by their respective commanders and for their examination.

That officers other than general and staff officers, and enlisted men be obliged to perform during the year not less than five compulsory drills and parades including inspection, and muster. Also additional drills in the evening, to the number of not less than sixteen annually, which shall be compulsory and shall be specified by the commanding officers of organizations. In addition, commanding officers may require officers and men of their respective organizations to meet for parade, drill and instruction at such time and places as he may appoint.

That commanding officers strive to secure the greatest possible efficiency in the use of fire-arms by the enlisted men. To this end there to be frequent target practice, in which all enlisted men to participate; the record of every enlisted man to be preserved and at the end of each year the Secretary of War to award a gold medal to the enlisted man in each regiment, or battalion or squadron, not part of a regiment, having the best record for efficiency, and a silver medal to the most efficient enlisted man in each troop, battalion or company. States to provide such medals as they may see fit.

That the Volunteer Militia in each State or Territory to perform at least ten consecutive days and not exceeding fifteen consecutive days of camp duty, under such regulations as may be prescribed by the President and the supervision of such officers as he may detail from the Army of the United States for such purpose. Each of such encampments shall consist of the entire Volunteer Militia in the State or Territory, or if the

number of such Volunteer Militia consist of more than six thousand men, they may be divided into more than one encampment of not less than about three thousand men each. When practicable, the President shall order to form a part of each of such encampments, such bodies of the Army of the United States as he may deem expedient.

That provision be made for warning for duty and returns of the same, military courts (courts of inquiry, courts-martial and delinquency courts), and for all detailed regulations relating thereto.

That the United States through the proper departments or bureaus of the War Department provide all organizations of States and Territories who become entitled to the benefits of the new law, with such arms, ammunition, uniforms, equipments, camp and garrison equipage, books of instruction, and of record and other supplies, as may be necessary for the proper performance of the duty required of them by the Militia law, to be kept in good repair and proper condition by the organizations to which issued.

That every commissioned officer shall provide himself with the arms, uniforms and equipments of the same pattern and kind as prescribed for officers of like grade and arm or department of service in the Army of the United States, complete for undress wear or active service, except that in all cases where the letters "U. S." are used on the uniforms by officers of the Army of the United States, to be used the letters, "U. S. V. M." in place thereof, together with the insignia of the arm of department or service, the initials or abbreviation of the State or Territory, and the numerical designation of the organization, as shall be prescribed by the President.

That every enlisted man in the Volunteer Militia be furnished by the United States with a service, or undress uniform and equipment of the description furnished to enlisted men of the Army of the United States. That there be not issued to any one man, but one complete uniform and equipment during his term of enlistment, but he may purchase any additional parts of uniform, clothing, or equipment for cash, at the price set upon the same by authority. Provided that in case of loss or damage to an extent to render unserviceable any article, while on duty

in active service of the State, or of the United States under orders, new issues may be made.

That regiments, battalions and squadrons not part of regiments and separate batteries, or troops not part of battalions or squadrons may, on consent of the Governor, adopt a dress uniform of their own, and at their own expense as prescribed by the Governor, or at the expense of the State or Territory, as to enlisted men.

That suitable provision be made for a uniform system of issue of and accountability for property.

That each State or Territory, shall at its own cost, either itself, or through its local authorities, provide suitable armories for all organizations of the active militia, convenient for purposes of drill and safe keeping of arms, equipments, accoutrements, uniforms, ammunition and military property, such suitability and convenience to be subject to the approval of an officer of the bureau of the Inspector-General of the Volunteer Militia, and shall employ all necessary armorers, janitors, engineers, and laborers, and provide all light, heat and other necessities.

That all cost of maintenance, transportation, subsistence and pay of the Volunteer Militia shall be borne by the States and Territories in which they are located, except when in the actual service of the United States, when they shall receive from the United States the same pay and allowance as are provided for officers and enlisted men of the Army of the United States of the same ranks and grades, or an increase thereof, as Congress may determine.

That upon certificate of an Inspector that such officer is uniformed, armed and equipped as provided by the Militia Law, approved by the Inspector-General of the Volunteer Militia, out of the funds appropriated by Congress to carry into effect the provisions of the Militia Law, each such officer shall be entitled to and receive the sum of thirty dollars, mounted officers, fifty dollars, to assist in uniforming and equipping themselves, but not until they shall have served as such a calendar year of twelve months, beginning with the first of January, provided that on being first commissioned a second lieutenant shall receive seventy-five dollars.

That whenever it shall appear to the President that any or

ganization of the Volunteer Militia in any State or Territory is below the required standard of efficiency for any cause, he shall so announce to the Governor of such State or Territory, and if within six months such organization shall not be brought up to the required standard of efficiency, as shown by the report of the Inspector-General of the Volunteer Militia, the President may withhold from such organization, all support of the United States and require the surrender of any and all property of the United States issued to it, either directly or indirectly, and such organization shall thenceforth cease to form a part of the Volunteer Militia of the United States.

That the President be authorized to make such regulations as he may deem proper and necessary, but such regulations shall conform to the new Militia law and amendments and as nearly as practicable, to the regulations governing the Army of the United States. Such regulations not to be repealed, amended or added to except by the Secretary of War when approved by the President. To aid in the compiling and making the same, the President to be authorized to appoint a Board to consist of two officers of the Army of the United States and five officers of the Volunteer Militia of the grade of general or field officers, the last named officers to represent by residence, as nearly as possible, the New England States, one; the Middle States, one; the Southern States, one; the Western States, two. The compensation of these, from the Volunteer Militia, to be fixed by the President, not to exceed the rate per diem of officers of similar grades of the Army of the United States, while actually employed on the duty for which the Board is created and the time expended in going to and from its place of meeting and their homes, together with proper expenses and disbursements; the senior army officer to be chairman of the Board.

That all matters relating to the organization, discipline and government of the active militia not otherwise provided for in the Militia law or in its general regulations, shall be decided by the custom and usage of the United States army.

That the annual sum of \$1,000,000 be appropriated, to be paid out of any money in the Treasury not otherwise appropriated, for the organizing, arming and disciplining the militia, to be distributed in the following manner and for the following

purposes : To such States, the laws of which have been so re-enacted or amended as to conform to and not conflict with the new militia law one year from the first day of July of the year in which the new militia law shall take effect or on the first day of July of any year thereafter, according to the number of their Representatives and Senators in Congress respectively ; to such States, the laws of which do not conform to or are inconsistent with the new militia law, forty per cent. of the sum they would receive (either in money or material) had their laws been re-enacted or amended so as to conform ; for the purposes of the payment of the allowances to commissioned officers, the providing of arms, ammunition, uniforms, equipments, camp and garrison equipage, books of instruction and of record, forms and other supplies required to be furnished to the Volunteer Militia and of the contribution to the military funds of such conforming States, of the balance remaining after the payment of the allowances to officers and after the proper arming, uniforming and equipping the Volunteer Militia in such States, when so certified by certificate of the Inspector-General of the Volunteer Militia. All allowances, arms, uniforms, etc., for the Territories and the District of Columbia, to be distributed as the President may direct.

That the new Militia law take effect one year from the first of July next following its enactment and that all prior laws be on that date, repealed.

The question of allowances to officers is considered of importance, otherwise many excellent officers may be kept out of the service, because unable to afford the expense.

It is fair to assume that each State and Territory can continue a yearly appropriation at least equal to that made in the past. The tendency in the States has been to increase these appropriations from time to time. The result of such an increase, as suggested, in the appropriation of the United States, will be that in those States which now make a considerable allowance for their active militia, the forces may be increased both in numbers and efficiency, whereas in such States as have not hitherto made appropriations proportionate to their population, area and resources, it is likely that with increased importance of service, they may consider it wise to do so. Should

the contrary be the case, it may be that the number of their forces may be somewhat reduced, but the remainder will be so much more efficient that the State will gain by the reduction.

All States should, and probably would, make their laws to correspond to a new militia law, but in case of any State not so conforming, it would probably be wiser to continue the pro-rata United States appropriation at the old rate of \$400,000 per annum, than to discontinue it altogether; at the same time allowing such State no benefit from the increase to \$1,000,000.

The reports of the War Department on the forces in the different States and Territories indicate that the sentiment is strong among those in authority to welcome any measures of the United States looking to the improvement of the service.

In Appendix "C" will be found tabulated, by States and Territories, the active militia 1897; one per thousand of population; three per thousand of population; State appropriation 1897; United States appropriations under present law 1897; same under new law suggested.

APPENDIX "A."

EXTRACTS FROM REPORTS, WAR DEPARTMENT FOR 1898.

INSPECTOR GENERAL, U. S. A.

"Recent experiences have shown that our militia system could advantageously be reconstructed and a more intimate relation established between it and the National Government."

"The great number of volunteer regiments moving to the centres of concentration without arms or uniforms, and the subsequent difficulties in meeting their needs promptly, suggest the establishment of reserve or supply depots at convenient points, in order that each State, on call, can put its quota in the field in condition for service, at least as far as arms and equipments go."

"To secure better cohesion between the National Guard and Regulars and the greatest efficiency of the troops in the field, funds should be provided for combined encampments and periodical military manœuvres and experimental mobilization in times of peace, as is customary with all first-class European powers. One of the most serious defects noted during the

Spanish-American War was the inexperience and utter disregard for the most elementary principles of military life in large camps."

SURGEON GENERAL, U. S. A.

"Considerations of domestic economy and sanitation in the companies and regiments were not given proper attention and men who were being taught to meet the enemy in battle succumbed to the hardships and unsanitary conditions of life in their camps of instruction."

CHIEF OF ORDNANCE, U. S. A.

"When the first call for volunteers from the States for the war with Spain was made, it was decided to take as many of the regiments of the National Guard as possible already armed and equipped by the States. * * * The supposition was that * * * the State troops, being already armed and equipped, would be ready for immediate service. This was based on the supposition that the arms and equipments were in good condition, an expectation not generally realized during the war. It is probable that the troops would have been ready for service as quickly by being equipped anew."

"As these troops (volunteers, first call) were mainly from the National Guards of the different States, it was understood that they were well equipped, * * * which supposition was not realized."

APPENDIX "B."

EXTRACTS FROM MESSAGES OF PRESIDENTS RELATIVE TO THE MILITIA.

PRESIDENT WASHINGTON, 1790.

"Among the many interesting objects which will engage your attention, that of providing for the common defense will merit particular regard. To be prepared for war is one of the most efficient means of preserving peace."

"A free people ought not only to be armed, but disciplined, to which end a uniform and well digested plan is requisite."

PRESIDENT WASHINGTON, 1791.

"The first (militia) is certainly an object of primary importance, whether viewed in reference to the national security, to

the satisfaction of the community, or to the preservation of order."

PRESIDENT WASHINGTON, 1793.

"They are incapable of abuse in the hands of the militia, who ought to possess a pride in being the depository of the force of the Republic, and may be trained to a degree of energy equal to every military exigency of the United States. But it is an inquiry which cannot be too solemnly pursued, whether the act 'more effectually to provide for the national defense by establishing a uniform militia throughout the United States' has organized them so as to produce their full effect; whether your own experience in the several States has not detected some imperfections in the scheme; and whether a material feature in an improvement of it ought not to be to afford an opportunity for the study of those branches of the military art which can scarcely ever be attained by practice alone."

PRESIDENT WASHINGTON, 1794.

"The devising and establishing of a well-regulated militia would be a genuine source of legislative honor, and a perfect title to public gratitude. I therefore entertain a hope that the present session will not pass without carrying to its full energy the power of organizing, arming, and disciplining the militia; and thus providing, in the language of the Constitution, for calling them forth to execute the laws of the Union, suppress insurrections, and repel invasions."

PRESIDENT WASHINGTON, 1795.

"With the review of our army establishment is naturally connected that of the militia. It will merit inquiry, what imperfections in the existing plan further experience may have unfolded. The subject is of so much moment, in my estimation, as to excite a constant solicitude that the consideration of it may be renewed until the greatest attainable perfection shall be accomplished. Time is wearing away some advantages for forwarding the object, while none better deserves the persevering attention of the public councils."

PRESIDENT JEFFERSON, 1801.

"These considerations render it important that we should,

at every session, continue to amend the defects which from time to time show themselves in the laws for regulating the militia, until they are sufficiently perfect. Nor should we now, or at any time, separate until we can say we have done everything for the militia which we could do were an enemy at our door."

PRESIDENT JEFFERSON, 1802.

"Considering that our regular troops are employed for local purposes, and that the militia is our general reliance for great and sudden emergencies, you will doubtless think this institution worthy of a review, and give it those improvements of which you find it susceptible."

PRESIDENT JEFFERSON, 1804.

"Should any improvement occur in the militia system, that will be always seasonable."

PRESIDENT JEFFERSON, 1805.

"I cannot, then, but earnestly recommend to your early consideration, the expediency of so modifying our militia system as, by a separation of the more active part from that which is less so, we may draw from it, when necessary, an efficient corps fit for real and active service, and to be called to it in regular rotation."

PRESIDENT JEFFERSON, 1806.

"A militia so organized that its effective portions can be called to any point in the Union, or volunteers instead of them to serve a sufficient time, are means which may always be ready yet never preying on our resources until actually called into use. They will maintain the public interests while a more permanent force shall be in course of preparation. But much will depend on the promptitude with which these means can be brought into activity."

PRESIDENT JEFFERSON, 1808.

"For a people who are free, and who mean to remain so, a well organized and armed militia is their best security. It is therefore incumbent on us at every meeting to revise the condition of the militia, and to ask ourselves if it is prepared to repel a powerful enemy at every point of our territories exposed to invasion. Some of the States have paid a laudable attention

to this subject ; but every degree of neglect is to be found among others. Congress alone has power to produce a uniform state of preparation in this great organ of defense ; the interest which they so deeply feel in their own and their country's security will present this as among the most important objects of their deliberation."

PRESIDENT MADISON, 1809.

"Whatever may be the course of your deliberations on the subject of our military establishments, I should fail in my duty in not recommending to your serious attention the importance of giving to our militia, the great bulwark of our security and resource of our power, an organization the best adapted to eventual situations for which the United States ought to be prepared."

PRESIDENT MADISON, 1810.

"These preparations for arming the militia having thus far provided for one of the objects contemplated by the power vested in Congress with respect to that great bulwark of the public safety, it is for their consideration whether further provisions are not requisite for the other contemplated objects of organization and discipline. To give to this great mass of physical and moral force the efficiency which it merits, and is capable of receiving, it is indispensable that they should be instructed and practiced in the rules by which they are to be governed. Toward an accomplishment of this important work I recommend for the consideration of Congress the expediency of instituting a system which shall in the first instance call into the field, at the public expense and for a given time, certain portions of the commissioned and non-commissioned officers. The instruction and discipline thus acquired would gradually diffuse through the entire body of the militia that practical knowledge and promptitude for active service which are the great ends to be pursued. Experience has left no doubt either of the necessity or of the efficacy of competent military skill in those portions of an army in fitting it for the final duties which it may have to perform."

PRESIDENT MADISON, 1812.

"A revision of the militia laws, for the purpose of render-

ing them more systematic and better adapting them to emergencies of war, is at this time particularly desirable."

PRESIDENT MADISON, 1813.

"The militia being always to be regarded as the great bulwark of defense and security for free States, and the Constitution having wisely committed to the national authority a use of that force, as the best provision against an unsafe military establishment, as well as a resource peculiarly adapted to a country having the extent and the exposure of the United States, I recommend to Congress a revision of the militia laws for the purpose of securing more effectually the services of all detachments called into the employment and placed under the Government of the United States."

PRESIDENT MADISON, 1814.

"I earnestly renew, at the same time, a recommendation of such changes in the system of the militia, as by classing and disciplining for the most prompt and active service the portions most capable of it, will give to that great resource for the public safety all the requisite energy and efficiency."

PRESIDENT MADISON, 1815.

"And I cannot press too much on the attention of Congress such a classification and organization of the militia as will most effectually render it the safeguard of a free State. If experience has shown in the recent splendid achievements of militia the value of this resource for public defense, it has shown also the importance of that skill in the use of arms, and that familiarity with the essential rules of discipline, which cannot be expected from the regulations now in force. With this subject is intimately connected the necessity of accommodating the laws, in every respect, to the great object of enabling the political authority of the Union to employ promptly and effectually the physical power of the Union in the cases designated by the Constitution."

PRESIDENT MADISON, 1816.

"An efficient militia is authorized and contemplated by the Constitution and required by the spirit and safety of free government. The present organization of our militia is universally

regarded as less efficient than it ought to be made, and no organization can be better calculated to give to it its due force than a classification which will assign the foremost place in the defense of the country to that portion of its citizens whose activity and animation best enable them to rally to its standard. Besides the consideration that a time of peace is the time when the change can be made with the most convenience and equity, it will now be aided by the experience of a recent war, in which the militia bore so interesting a part."

PRESIDENT MONROE, 1817.

"An improvement in the organization and discipline of the militia is one of the great objects which claims the unremitted attention of Congress."

PRESIDENT MONROE, 1822.

"I have to add, that in proportion as our regular force is small, should the instruction and discipline of the militia, the great resource on which we rely, be pushed to the utmost extent that circumstances will admit."

PRESIDENT MONROE, 1823.

"As the defense and even the liberties of the country must depend in times of imminent danger on the militia, it is of the highest importance that it be well organized, armed, and disciplined throughout the Union."

PRESIDENT ADAMS, 1825.

"The organization of the militia is yet more indispensable to the liberties of the country. It is only by an effective militia that we can at once enjoy the repose of peace, and bid defiance to foreign aggression; it is by the militia that we are constituted an armed nation, standing in perpetual panoply of defense, in the presence of all the other nations of the earth. To this end it would be necessary so to shape its organization as to give it a more united and active energy. There are laws for establishing a uniform militia throughout the United States, and for arming and equipping its whole body. But it is a body of dislocated members, without the vigor of unity, and having little of uniformity but the name. To infuse into this most impor-

tant institution the power of which it is susceptible, and to make it available for the defense of the Union, at the shortest notice, and at the smallest expense of time, of life, and of treasure are among the benefits to be expected from the persevering deliberations of Congress."

PRESIDENT ADAMS, 1826.

"The occasion was thought favorable for consulting the same board, aided by the results of a correspondence with the governors of the several States and Territories, and other citizens of intelligence and experience, upon the acknowledged defective condition of our militia system, and of the improvements of which it is susceptible. The report of the board upon this subject is also submitted for your consideration."

PRESIDENT JACKSON, 1832.

"If in asserting rights, or in repelling wrongs, war should come upon us, our regular force should be increased to an extent proportioned to the emergency, and our present small army is a nucleus around which such force could be formed and embodied. But for purposes of defense, under ordinary circumstances, we must rely upon the electors of the country. Those, by whom, and for them, the Government was instituted and is supported, will constitute its protection in the hour of danger, as they do its check in the hour of safety.

"But it is obvious that the militia system is imperfect. Much time is lost, much unnecessary expense incurred, and much public property wasted under the present arrangement. Little useful knowledge is gained by the musters and drills now established, and the whole subject evidently requires a thorough examination. Whether a plan of classification, remedying these defects and providing for a system of instruction, might not be adopted, is submitted to the consideration of Congress. The Constitution has vested in the general government an independent authority upon the subject of the militia, which renders its action essential to the establishment or improvement of the system, and I recommend the matter to your consideration, in the conviction that the state of this important arm of the public defense requires your attention."

PRESIDENT JACKSON, 1835.

"Occurrences to which we, as well as other nations, are liable, both in our internal and external relations, point to the necessity of an efficient organization of the militia. I am again induced by the importance of the subject to bring it to your attention. To suppress domestic violence, and to repel foreign invasion, should these calamities overtake us, we must rely in the first instance upon the great body of the community whose will has instituted and whose power must support the Government."

PRESIDENT JACKSON, 1836.

"In this connection it is also proper to remind you that the defects in our present militia system are every day rendered more apparent. The duty of making further provision by law for organizing, arming, and disciplining this armed defense has been so repeatedly presented to Congress, by myself and my predecessors, that I deem it sufficient on this occasion to refer to the last annual message and to former executive communications in which the subject has been discussed."

PRESIDENT VAN BUREN, 1837.

"It is not, however, compatible with the interests of the people to maintain, in time of peace, a regular force adequate to the defense of our extensive frontiers. In periods of danger and alarm we must rely principally upon a well-organized militia, and some general arrangement that will render this description of force more efficient has long been a subject of anxious solicitude. It was recommended to the first Congress by General Washington, and has since been frequently brought to your notice, and recently its importance strongly urged by my immediate predecessor. The provision in the Constitution that renders it necessary to adopt a uniform system of organization for the militia, throughout the United States, presents an insurmountable obstacle to an effective arrangement by the classification heretofore proposed, and I invite your attention to the plan which will be submitted by the Secretary of War, for the organization of volunteer corps, and the instruction of the militia officers, as more simple and practicable, if not equally

advantageous as a general arrangement of the whole militia of the United States."

PRESIDENT VAN BUREN, 1838.

"I would again call your attention to the subjects connected with and essential to the military defenses of the country, which were submitted to you at the last session, but which were not acted upon, as is supposed, for want of time. The most important of them is the organization of the militia on the maritime and inland frontiers. This measure is deemed important, as it is believed that it will furnish an effective volunteer force in aid of the regular army, and may form the basis for a general system of organization for the entire militia of the United States."

PRESIDENT VAN BUREN, 1839.

"The present condition of the defenses of our principal sea-ports and navy-yards, as represented by the accompanying report of the Secretary of War, calls for the early and serious attention of Congress; and, as connecting itself intimately with this subject, I cannot recommend too strongly to your consideration the plan submitted by that officer for the organization of the militia of the United States."

PRESIDENT TYLER, 1843.

"In all cases of emergency the reliance of the country is properly placed in the militia of the several States, and it may well deserve the consideration of Congress whether a new and more perfect organization might not be introduced, looking mainly to the volunteer companies of the Union for the present, and of easy application to the great body of the militia in time of war."

PRESIDENT LINCOLN, 1861.

"The recommendation of the Secretary (of War) for the organization of the militia on a uniform basis, is a subject of vital importance to the future safety of the country, and is commended to the serious attention of Congress."

PRESIDENT HAYES, 1880.

"Attention is asked to the necessity of providing by legislation for organizing, arming and disciplining the active militia

of the country, and liberal appropriations are recommended in this behalf."

PRESIDENT ARTHUR, 1882 AND 1883.

"I invite the attention of Congress to the propriety of making more adequate provision for arming and equipping the militia."

"From the reports of these (U. S. Army) officers I am induced to believe that the encouragement of the State militia organizations by the National Government would be followed by very gratifying results and would afford it in sudden emergencies, the aid of a large body of volunteers educated in the performance of military duties."

PRESIDENT HARRISON, 1890.

"The encouragement that has been extended to the militia of the States, should be continued and enlarged. These military organizations constitute in a large sense the army of the United States, while about five-sixths of the annual cost of their maintenance is defrayed by the States."

PRESIDENT CLEVELAND, 1896.

"The appropriations for its (organized militia) support by the several States approximate \$2,800,000 annually, and \$400,000 is contributed by the general government. Investigation shows these troops to be usually well drilled and inspired with much military interest, but in many instances they are so deficient in proper arms and equipment that a sudden call to active duty would find them inadequately prepared for field service. I therefore recommend that prompt measures be taken to remedy this condition and that every encouragement be given to this deserving body of unpaid and voluntary citizen soldiers, upon whose assistance we must largely rely in time of trouble."

APPENDIX "C."

STATES and TERRITORIES.	Organ- ized Militia 1897.	1* per 1000 of popula- tion. Census 1890.	3* per 1000 of popula- tion. Census 1890.	State Appropri- ations 1897.	U. S. Appropri- ation 1897.	U. S. Appropri- ation if increased to \$1,000,000.
Alabama.....	2,488	1,513	4,539	\$ 26,500	\$ 9,500	\$ 23,750
Arkansas.....	2,020	1,128	3,386	none	6,900	17,250
California.....	3,909	*1,208	*3,624	154,000	7,800	19,500
Colorado.....	1,056	412	1,237	30,000	3,500	8,750
Connecticut.....	2,739	*746	*2,239	150,000	5,200	13,000
Delaware.....	458	168	505	5,500	2,600	6,500
Florida.....	1,134	391	1,174	16,000	3,400	8,500
Georgia.....	4,450	1,837	5,512	25,000	11,213	28,032
Idaho.....	508	*84	*253	5,250	2,600	6,500
Illinois.....	6,260	3,836	11,509	215,000	21,000	52,500
Indiana.....	2,875	2,192	6,577	45,000	13,000	32,500
Iowa.....	2,470	1,912	5,736	45,000	13,000	32,500
Kansas.....	1,463	1,427	4,281	22,500	8,600	21,500
Kentucky.....	1,371	1,858	5,576	7,000	11,300	28,250
Louisiana.....	2,693	1,118	3,356	21,000	6,900	17,250
Maine.....	1,345	661	1,983	37,300	5,200	13,000
Maryland.....	1,725	1,042	3,127	45,000	6,900	17,250
Massachusetts.....	5,154	2,338	7,016	264,100	12,900	32,250
Michigan.....	2,898	2,094	6,282	92,000	12,000	30,000
Minnesota.....	1,894	1,302	3,905	50,000	7,800	19,500
Mississippi.....	1,795	1,289	3,869	4,400	7,800	19,500
Missouri.....	2,349	*2,679	*8,038	20,000	14,700	36,750
Montana.....	632	*132	*396	5,000	2,600	6,500
Nebraska.....	1,158	1,059	3,177	15,000	6,900	17,250
Nevada.....	368	*46	*137	3,800	2,600	6,500
New Hampshire....	1,305	377	1,130	30,000	3,500	8,750
New Jersey.....	4,297	1,445	4,335	107,000	8,600	21,500
New York.....	13,894	5,998	17,994	447,000	31,000	77,500
North Carolina....	1,537	1,618	4,854	6,000	9,500	23,750
North Dakota.....	467	183	548	11,000	2,600	6,500
Ohio.....	6,004	3,672	11,017	160,000	19,900	49,750
Oregon.....	1,428	*314	*941	30,000	3,500	8,750
Pennsylvania.....	8,521	5,258	15,774	350,000	27,600	69,000
Rhode Island.....	1,315	346	1,037	48,500	3,500	8,750
South Carolina....	3,127	1,151	3,454	8,000	7,800	19,500
South Dakota.....	696	329	986	500	3,500	8,750
Tennessee.....	1,696	1,768	5,303	10,000	10,400	26,000
Texas.....	3,023	2,236	6,707	5,000	12,900	32,250
Utah.....	580	208	624	5,000	2,600	6,500
Vermont.....	743	332	997	15,000	3,500	8,750
Virginia.....	2,739	1,656	4,968	11,000	10,350	25,875
Washington.....	737	349	1,048	3,000	3,500	8,750
West Virginia....	965	763	2,288	16,700	5,200	13,000
Wisconsin.....	2,711	1,687	5,061	100,000	10,351	25,877
Wyoming.....	356	*61	*182	5,200	2,600	6,500
Arizona.....	539	*60	*180	4,400	2,308	5,770
Dist. of Columbia.	1,271	372	1,116	21,125	7,000	17,500
New Mexico.....	652	*154	*462	375	3,000	7,500
Oklahoma.....	547	*62	*186	none	2,900	7,250
Totals.....	114,362	62,871	188,626	\$2,699,150	\$403,522	\$1,008,804

Average..... 125,748

* Census of 1900 will naturally make increases, more particularly in the Western States.

IN WHAT WAY CAN THE NATIONAL GUARD BE MODIFIED SO AS TO MAKE IT AN EFFECTIVE RESERVE TO THE REGULAR ARMY IN BOTH WAR AND PEACE.*

BY CAPTAIN HERBERT BARRY, TROOP 3, SQUADRON A, N. G. N. Y.

I.

PRELIMINARY QUESTIONS.

THE question propounded presupposes an affirmative answer to another inquiry, upon which, however, there is by no means unanimity of opinion. That is the question whether it is desirable that the National Guard should be utilized as a reserve to the Regular army.

THE OBJECTIONS TO ANY SUCH PLAN.

Many persons, and among them some who have served long in the Guard and given to its interests much thought and attention, believe that the National Guard should not be considered in any sense as an adjunct or reserve to the Regular army: that its proper sphere is as a State institution, to preserve the peace (as in suppressing riots), and that it should only be called into service in time of war in the supreme emergency of actual hostile invasion, in which event it could be called upon to oppose the progress of the invader while the levies of volunteers were being organized. The volunteer army being organized the National Guard regiments would return to their armories and the members resume their ordinary vocations.

This theory as to the National Guard's proper sphere of action cannot be lightly put aside. It demands consideration as well on account of the prominence of some of its supporters as by reason of the arguments brought forward in its support.

It is claimed, and truly, that the personnel of the Guard is not that of the Regular army nor even that of a volunteer

* This paper was awarded first honorable mention in the competition of 1899, for the prize of a Gold Medal—the Board of Award being composed of Governor Theodore Roosevelt, New York, Major Gen. Thos. H. Ruger, U. S. A., and Major Gen. J. W. Plume, N. G. State of New Jersey.

army. A large proportion of the members of the Guard consist of men who have others dependent upon them for support and there are many who hold business and professional positions of such character that to be called away as soldiers in a war perhaps of long duration, involves severe hardship. These critics also hold, and with justice, that these same men who are by their domestic and business relations disqualified from taking part in military operations—except for a brief period in the supreme necessity of repelling invasion, or in the last necessity when all able-bodied men are called to serve—nevertheless constitute a very valuable element in the Guard.

Among these men will be found enthusiastic members who are patterns of discipline and punctilious in the performance of duty, who devote much time and effort to raising the standard of their organizations, who give intelligent study to military subjects and who cannot be well spared from the National Guard organizations. These men can give the necessary time—mostly at night—to their military duties in ordinary times, and can absent themselves from their accustomed pursuits during the brief period that a riot or strike usually lasts, but could not without great hardship to, and sacrifice of others, leave everything to become a soldier for the term of a war.

Such a sacrifice is claimed to be wholly unnecessary since there are outside the Guard, multitudes of young men unhampered by any obligation, domestic or otherwise, to prevent their going into service and who are eager for the chance.

The force of this argument cannot be ignored and in the plan suggested it is believed these objections are substantially met, while at the same time a practical method is proposed of utilizing the National Guard as a real reserve to the Regular army.

THE LIMITATIONS OF THIS INQUIRY.

The scope of this paper is necessarily limited to a discussion of the methods whereby the modifications may be made in the National Guard so as to constitute it an effective reserve to the Regular army. It is not here permissible to discuss any plan for modifying at the same time the organization of the army which would facilitate this end.

This restriction greatly curtails the field of discussion. The

army must be accepted as it is, the changes proposed must be made in the National Guard only. By reason of this limitation suggestions that might be drawn from a study of European systems are for the most part inapplicable. Thus the system generally prevails in Continental Europe, and of late years in Great Britain as well, of dividing the country into military districts and assigning a regiment or other body to each district. In such district it has its depot from which it draws its recruits and with which it is identified. Each regiment, therefore, represents a certain locality and the formation of a reserve to it in that locality is rendered easier. In this country the problem is different.

Another limitation upon our proposed plan must be that it shall be practicable; in other words, the problem is not to provide the best theoretical method but one which will be sustained and enforced by our people. Existing institutions must be respected and preserved so far as possible, it being borne in mind that those things that are evolved by necessity and developed by time are often better adapted to the temperament of our people, and more likely to endure than much more symmetrical and logical creations, not so brought forth.

The history of our militia hereinafter referred to illustrates how ineffective is legislation that is not adapted to existing conditions. In countries where the people are subjects a military system may be enforced even though it involves active service from every able-bodied man and even though irksome to the great majority. Here a military system must be based upon the approbation of the body of the people.

II.

THE ORIGIN OF THE NATIONAL GUARD.

HISTORICAL SKETCH.

The pioneer settlers of this country found themselves in contact with Indian tribes, many of them warlike and not infrequently hostile. Self-preservation made of these settlers fighting men.

In the sparsely settled communities that grew up along the Atlantic coast, and from which the original thirteen colonies were developed, the entire available force was at times required

for protection from their savage neighbors, and their sturdy male members were a true militia—an armed community. In times of danger each man armed with a rifle or fowling piece owned by himself and with the use of which he was familiar, presented himself at the place of assembly and for the irregular style of warfare to which they were accustomed a very loose form of organization was adequate. It was such a body of citizen soldiery that confronted the British troops at Lexington and Bunker Hill and many other engagements of the Revolutionary period.

While such a militia or armed body of citizens was admirable in its way, developed patriotism and sturdy independence and was effective for conflicts with the uncivilized Indians, yet as the colonies expanded in area and became more populous, thereby limiting to the frontiers the danger of such incursions, and particularly after the conflicts with the French, it was found that a modification of the militia system looking to higher discipline and greater efficiency with smaller numbers was desirable.

The earliest legislative provision for an organized militia in this country is probably to be found in a law promulgated in 1664 by James, Duke of York and Albany. It provided that all males above the age of 16 should be enrolled and subject to military duty and contained other features subsequently embodied in the Militia Act of 1792.

In 1702 this Act was amended by Queen Anne. By this Act each militiaman was required to appear at drill and muster armed and equipped in a specified manner and delinquency was punishable by fine, the Act providing:

"In case the offender be unable or refuse to pay and he have no goods to distress, he shall ride the wooden horse, or be laid by the neck and heels in a public place for not to exceed an hour."

In 1775 the Continental Congress recommended

"That one-fourth part of the militia in every colony be selected for minute-men of such persons as are willing to enter into the necessary service * * * and as these minute-men may eventually be called to action before the whole body of the militia are sufficiently trained it is recommended that a more

particular and diligent attention be paid to their instruction in military discipline."

The war of the Revolution produced many illustrations of the ineffective nature of the militia organizations for campaigns of any duration and for military operations against a civilized and disciplined enemy. The minute-men and other levies of militia when called into service had little organization, training and discipline. The short time for which they enlisted frequently expired, however, before these deficiencies were rectified and often during critical stages of a campaign.

Officers and men seem to have served in different organizations almost indiscriminately. At one call they were in one regiment or company and at another call in another regiment or company. (See "New York in the Revolution," by James Roberts, Comptroller.)

The people had suffered so much, however, from the troops employed by England to keep the Colonies in subjection that a dislike to and distrust of standing armies was deeply implanted in their minds. This feeling is voiced in the Declaration of Independence where, among the grievances enumerated, are included:

"The history of the present King of Great Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute tyranny over these States. * * *

"He has kept among us in times of peace standing armies without the consent of our Legislature.

"He has affected to render the military independent of and superior to the civil power. * * *

"Quartering large bodies of armed troops among us."

The same men who subscribed to the Declaration of Independence recognized, however, the need to an independent nation of an efficient military force which should be immediately at the disposal of the National Executive in time of need, and this they hoped to secure from select bodies of the militia.

Alexander Hamilton, writing at this time says: (Federalist, XXXV.)

"Little more can reasonably be aimed at with respect to the people at large than to have them properly armed and equipped;

and in order to see that this be not neglected, it will be necessary to assemble them once or twice in the course of a year.

"But though the scheme of disciplining the whole nation must be abandoned as mischievous or unpracticable; yet it is a matter of the utmost importance that a well-digested plan should as soon as possible be adopted for the proper establishment of the militia. The attention of the Government ought particularly to be directed to the formation of a select corps of moderate extent, upon such principles as will really fit them for service in case of need. By thus circumscribing the plan it will be possible to have an excellent body of well-trained militia ready to take the field whenever the defense of the State shall require it."

The matter of organizing the militia was called to the attention of Congress by Washington in 1790, and again in 1791.

In 1792 Congress addressed itself to the task and enacted the "Militia Law," which with some slight modifications continues upon the statute books to the present day. Certain salient features of this law are as follows:

(a) The militia embraces "every able-bodied male citizen of the respective States," between the ages of 16 and 45 years.

(b) All of the militia are required to be enrolled and organized into companies with officers and non-commissioned officers.

(c) Each member of the militia is required to supply himself and be constantly provided with arms and equipment.*

(d) There is no provision for the formation of selected bodies of the militia who may be more highly trained and disciplined, and who may be first called upon in an emergency.

In 1793, the year following the enactment of this law, President Washington in his Annual Message to Congress questioned the adequacy of this legislation and urged further careful consideration of the subject.

"It is an inquiry which cannot be too solemnly pursued,

*When it is considered that this statute is still applicable to every male citizen, the specifications as to the arms with which he is to provide himself is curious reading, viz.:

"A good musket or firelock of a bore sufficient for balls of the eighteenth part of a pound, a sufficient bayonet and belt, two spare flints * * * or with a good rifle, knapsack, shot pouch and powder horn, twenty balls suited to the bore of his rifle, and a quarter of a pound of powder." * * *

whether the Act 'more effectually to provide for the National defense by establishing a uniform militia throughout the United States' has organized them so as to produce their full effect; whether your own experience in the several States has not detected some imperfections in the scheme, and whether a material feature in an improvement of it ought not to be to afford an opportunity for the study of those branches of the military art which can scarcely ever be attained by practice alone."

The importance of securing adequate legislation to provide for the organization of an effective force from the militia was urged by Washington, Jefferson, Madison, Monroe, Adams, Jackson and other Presidents; but little was done by Congress beyond providing an annual appropriation to furnish arms and equipment.

The scheme of the original militia law contemplated that every able-bodied man should be a citizen soldier, should keep himself provided with arms and be regularly enrolled in an organized company. The Act of Congress did not prescribe what amount of instruction should be given but it was apparently contemplated that each company so organized should undergo some training and drill. (U. S. Rev. Statutes. Sec. 1634, 1637, 1640.)

It is doubtful whether the universal enrollment and organization contemplated by the Act was ever actually carried into effect. Certainly, after some years it was not enforced. A report of Adjutant-General Paulding to the Governor of New York, dated August 9, 1812, showed that of 9 major generals and 47 brigadier generals of militia only two had made the proper returns, showing the roster of officers in their respective divisions and brigades. In the early days of the nation the annual musters of the militia companies were notable events, but it is probable that these musters were the extent of the military activity of the great majority of militiamen. As time passed even these were less observed, the requirements as to enrollment were disregarded and finally the militia system, as originally contemplated, ceased to exist.

This result was inevitable; the system, although suitable at an earlier period of the country's existence, was not adapted to the changed conditions that resulted from the growth of the

country. The militiamen, armed with miscellaneous fire-arms which they themselves provided, having no uniforms and being required to assemble at rare intervals only, would be wholly deficient in drill and military training, and when assembled for purposes of muster the spectacle presented would be neither impressive nor inspiring. So low had they fallen from a military standpoint that in criticising the Persian army—one of the lowest in the scale of efficiency—the late General Emory Upton said “Drill to the Persian soldier like our old ‘general trainings,’ signifies naught but noise and display.” Many who might have taken an interest in the work felt themselves ridiculous under such circumstances, and the enrollment being practically universal embraced great numbers of men whose active business interests were seriously interfered with by any military duty more than purely perfunctory. In times of peace this class found military duties very irksome.

The growth of the population in addition to the separation of this country by natural barriers from other nations made it progressively less necessary for all the male citizens to be enrolled in the militia, and as this was recognized by the individuals opposition to the system increased.

Efforts were made to introduce modifications whereby the original system might be preserved, but these efforts met with scant success.

President Jefferson in 1805 said in his Annual Message to Congress:

“I cannot then but earnestly recommend to your early consideration the expediency of so modifying our militia system as by a separation of the more active from that which is less so you may draw from it when necessary an efficient corps fit for real and active service and to be called to it in regular rotation. To give to this great mass of physical and moral force the efficiency which it merits and is capable of receiving, it is indispensable that they should be instructed and practised in the rules by which they are to be governed.”

The record made by the militia in the War of 1812 was not wholly creditable and brought clearly into view the deficiencies of the system. The defection and practical mutiny of a portion of the forces is historic, and even among those bodies which

showed themselves loyal and zealous the military efficiency was lamentably low.

In the preface to the Military Papers of Governor Tompkins, published by the New York State Historian, the author says, with reference to conditions existing in the year 1812 :

"The militia was -enthusiastic but undisciplined, willing but untrained :

* * * * *

"This engagement cast anything but credit on the militia. After the first onslaught they were seized with a timidity that coaxing and threats could not overcome, and they positively refused to obey any order that would expose them to the enemy's fire."

In 1816 President Madison in his message to Congress said :

"The present organization of our militia is universally regarded as less efficient than it ought to be made."

President Jackson in 1832 said in his message to Congress :

"Little useful knowledge is gained by the musters and drills now established, and the whole subject evidently requires a thorough examination."

At almost every session of Congress for fifty years following the enactment of the militia law of 1792 the question of modifying this law was under discussion and various plans were formulated but none were carried into effect. Meantime while the doctors debated the patient died. The organization of the militia simply ceased to exist.

But while the efforts to provide legislation to secure select bodies of militia effectively organized, disciplined and armed were ineffective, this was being done in a measure throughout the various States without such legislation. Volunteer organizations of militia had sprung up, and being fostered and encouraged by the respective States, the deficiencies in the federal law were in part supplied. In these volunteer and independent organizations may be found the origin of the present National Guard. As voluntary associations they possessed the merit of individual interest on the part of their members, a feature in which the old militia companies had been sadly lacking ; and for the same reason it became a matter of pride to appear prop-

erly uniformed and equipped and to attain a fair degree of proficiency in drill. On the other hand the voluntary character of the membership made the enforcement of discipline difficult, the amount of training was for the same reason limited, and the various organizations differed widely in organization, uniform and methods as well as names. Such names as "Blues," "Greys," "Rifles," "Cadets," "Zouaves," and "Hussars" usually combined with the name of the locality or with a proper name to give individuality were common, and in many States few commands existed larger than companies, troops and batteries.

In the Civil War most of these existing organizations enlisted with the Volunteers and with the close of the war some ceased to exist, while others resumed their character as militia after being mustered out of the federal service.

The effect of the war was probably in the direction of producing uniformity among these organizations, and of late years this tendency has extended and increased. Independent companies organized by special charter bearing distinctive names and having distinctive uniforms have given place to State troops organized under uniform general statutes, being component parts of a general organization, with uniform, name, discipline and training controlled and directed by a central authority of the State.

In some States these troops have been brought to quite a high state of organization and discipline; in others there is a large organization on paper and little in fact, in this respect resembling the Chinese army at the outbreak of her late war with Japan. One aim should be to carry the progress toward uniformity and effectiveness, another step forward, and make the organization and training of the citizen soldiers not only uniform throughout each State, but throughout the whole country as well.

III.

OUR EXISTING SYSTEM.

The National Guard as organized at the outbreak of the war with Spain and at present, is such in name only. Its organizations are not National but State forces.

In each State provision is made by which certain companies, regiments and other organizations shall be organized from the body of its militia—*i. e.*, its male population subject to military service—and shall be officered, uniformed and equipped.

The forces so organized are in every sense of the word State troops—the term National Guard is a misnomer. The Governor of the State is the Commander-in-chief of the little State army, and in most States there is an adjutant general and general staff, besides various brigadier and even major generals with their attendant staffs. In short, each State has its own little army with the governor at its head, and staff, field and line organization wholly independent of the National Government, although the latter contributes largely to its equipment.

To call such a system, or group of systems, with many points of divergence, a National Guard is evidently a misnomer. This fact was amusingly illustrated by the circumstance that interminable discussions were rife in the early months of 1898 as to whether the National Executive had power to order out these forces.

The State gives to its little army, among other things, their respective armories, the uniforms for enlisted men, the arms and equipment (although a part of this is supplied by the Federal Government), and pays the members when in State service under certain conditions. The State also prescribes the regulations for the government of its army, and exercises entire control and administration. The Federal Government exercises no control or direction.

In thirty-eight of the States the organized State troops are known as the National Guard. In three States, Arkansas, Kentucky, and North Carolina, the term "State Guard" is used; other designations are: "Massachusetts Volunteer Militia"; "Rhode Island Militia"; "Virginia Volunteers"; "South Carolina Volunteer Troops"; "Georgia Volunteers"; "Florida State Troops"; "Louisiana State National Guard" and "Texas Volunteer Guard."

EVILS OF THE PRESENT SYSTEM.

Among the more conspicuous evils growing out of the present system are:

1. An untrained and useless general staff.

2. Officers appointed without adequate qualifications and never adequately trained and instructed.

3. Enlisted men admitted without adequate physical examination.

4. Inadequate experience in the field—as distinguished from the armories and fixed camping grounds.

5. No definite position among the forces of the nation in the event of war.

(1) The staff officers with which the Executive of a State is wont to surround himself are often a matter of jest. The complete ignorance on military subjects and incompetency for any actual military duties of the glittering colonels and generals that decorate his official functions and ride behind him in parades with obvious trepidation (their horsemanship being as new as their titles) is notorious. The actual military organization of the State is, in many instances, top-heavy with tinsel staff officers—ephemeral creatures that come into being with a new chief executive and disappear when he retires from office.

When it is considered how important are the duties devolving upon officers of the general staff of an army in time of war, and how necessary it is to the success of military operations that men of the highest qualifications should be placed in such positions, it is evident that a system is faulty in which men are appointed who have no training or aptitude for such duties. If no occasion arises calling for the exercise of the duties of the position, the office is merely discredited; should such occasion however arise, the result must be inefficiency, confusion, and much actual loss.

The converse of this situation is found in the German army, and there a position upon the general staff is perhaps more sought for than any other military distinction and is the prize of long and intelligent effort combined with natural aptitude. A War Academy is maintained to educate officers for the duties of the general staff and of other high commands, among other qualifications, the candidate must be a graduate from the War Academy; must have shown ability as an officer in more than one arm of the service; and before each promotion staff officers are required to return to the line and serve there for a period.

(2) The importance to any military organization of securing competent field and line officers cannot be over-estimated. Unless so supplied it is useless to expect good results. In this particular, extensive changes should be made in the methods at present generally observed in the National Guard. It is not meant that many excellent officers will not be found in the Guard, but the criticism is levelled against the looseness of any system that permits the appointment of incompetent officers and their retention in office irrespective of their qualifications.

Considered *a priori*, we should not expect to find officers of the highest type developed by the existing systems. In all States the officers are commissioned by the Governor, though in most instances, the appointment is merely formal, the appointee being elected by the organization to which he is appointed, and being in most of the States required to pass an examination before a board of State officers. The spring cannot rise above its source, and the scope of examination is necessarily limited by the measure of knowledge and experience possessed by the examining officers. The great majority of these will probably be found to have had little or no experience outside of the National Guard in its purely State functions.

In the matter of examination the systems differ greatly in the various States. In eight States no examination is required. In thirty-seven States an examination is required as a condition to the granting of the first commission. In a smaller number of States, examination is required upon promotion to higher rank.

The young officer having passed the examination finds the horizon of his associates limited to a round of armory duty, parades and formal out-door drills at a formal camp—usually of one week's duration and occurring at intervals of one or two years. The possibility of duty in suppressing riots terminates the vista of active service, and if he speculates on what his functions would be in the contingency of actual war he is most unlikely to do much more. He may possibly read some works on military subjects—though if he does so he is exceptional—but he has no opportunity, had he the desire, to gain any actual experience of marching, camping, reconnoitring, or caring for men under service conditions.

Looked at in the light of experience we find that the officers of National Guard regiments have not made an entirely satisfactory record under war conditions when taken fresh from their homes. Confronted with situations to them entirely novel and unexpected they found themselves unprepared and during the first months of the war with Spain, neither in the care of their men in march and in camp, nor in handling them in the presence of the Spanish forces, did the National Guard officers as a whole make a particularly enviable record. Without any spirit of censure it may be said that in Cuba a regiment from Massachusetts, and one from New York illustrated these criticisms, and the same thing was shown at Manila, during the night attack of the Spanish troops upon our lines, on July 31st. The conditions were trying, and the officers of a Pennsylvania regiment lost control of their men who began to fire wildly and without command. At this critical juncture an officer of the Regular artillery rose to the occasion and assumed command. Shouting in stentorian tones that he would shoot any man who fired without orders, he got the men once more in hand; and fire discipline being restored, the attack was readily repulsed. This same regiment subsequently did most effective work, and officers and men alike earned the highest praises for their efficiency.

(3) In every State the enlisted men are expected to be physically sound when entering the service and in most if not all, the applicants for enlistment must undergo a physical examination before a regimental surgeon. In the past, this examination has usually been somewhat perfunctory—in some cases entirely so. The results were seen when the National Guard regiments volunteered for service in the war. All volunteers were required to undergo the physical examination required in the Federal service and under this ordeal a large proportion were rejected. It is, of course, possible that many of these, repenting of their first enthusiasm, suddenly developed defective vision or color blindness, but it is unquestionable, that a large percentage were rejected for physical deficiencies other than this form of heart failure, and thereby the National Guard regiments went into service in many instances with upwards of 25 per cent. of their numbers consisting of newly enlisted recruits.

(4) The lack of practical experience outside of drill work in armories and formal camps, rifle practice on measured ranges, and guard mounting and parades, has already been adverted to. The importance of such practical experience cannot be overestimated. The difference between a body of troops with experience in taking care of themselves under service conditions, officered by competent men, and a body not having these advantages is well illustrated in Kipling's story "The Drums of the Fore and Aft." It had many illustrations from real life in our late war though not depicted by such a powerful pen. The late President of the National Guard Association of the State of New York, Col. Henry Chauncey, Jr., in his report rendered on January 18, 1899, said:

"The National Guard or Volunteer Militia, call it what you will, responded most nobly last spring to the President's call, but how inadequate it was, how ill instructed, how undisciplined, the history of the various training camps tells only too well. The members are patriotic, enthusiastic, willing to work, willing to learn, but from the force of circumstances their opportunities of learning the art of war are most limited."

As at present organized the National Guard so called is not adapted for a fighting machine in actual war. On the other hand, for this purpose the Regular army—in its field and line officers and in its enlisted men—leaves little to be desired. The problem is to so modify the former that it may form a powerful and efficient reserve to the latter.

(5) The lack of a definite status among the national forces in the event of war might not seem at first glance a serious objection, but it is not insignificant. If the men who labor and strive to build a regiment of the National Guard into an effective military organization find on the breaking out of war that this body of men have no status in the scheme of national defense, that it is purely a matter of chance or of political favoritism whether they form any part of the national forces, and that they are placed upon exactly the same footing as newly organized volunteer regiments with untrained officers and raw recruits; in such cases these men who have expended their efforts in the National Guard are likely to question the utility

of such effort and it is but a short step to question that the National Guard has any reason for its existence.

Precisely the same train of thought will discourage effort by more recent members and may even deter others from entering the ranks as recruits.

IV.

COMPARISONS WITH OTHER SYSTEMS.*

In the nations of Continental Europe the military establishments are upon such a large scale, and the conditions differ so greatly from those that exist in our own favored country, that few general comparisons can be made which would be of use in this inquiry. Briefly summarized, it may be said that in those countries a system of conscription prevails by which substantially the entire male population is organized for military service.

The Regular army is large and is maintained on two distinct footings—one of peace, the other of war. The army is recruited by draft to which, with comparatively few exceptions, all able-bodied males are subject. The term of military service varies in different countries from twelve to twenty years and usually begins with the twenty-first year of age. From those liable to military service a specified number are drawn annually; these are required to serve with the colors—the standing army. The others in some countries are assigned to an organized reserve.

The term of military service is so divided that those men who happen to be drafted, shall serve from three to six years with the colors, then pass into reserve from four to nine years—subject at any time to be recalled to the colors; then into an army of the second line called "*Landwehr*," "*Militia Mobile*," or "*Armee Territoriale*," and lastly into a body as yet unorganized termed "*Landsturm*," "*Militia Territoriale*," or "*Reserve of the Armee Territoriale*."

In Great Britain, although the conditions differ greatly from those existing here, there is more opportunity for comparison. Besides her Regular army, Great Britain has organized reserves

* It is proper to state that in securing the data to which reference is made in this portion of the article, the writer has not had an opportunity of examining authoritative sources of recent date. It may therefore, be that discrepancies will appear between the facts and figures here mentioned and those now existing.

and volunteer forces of several classes, the most important of which are mentioned below.

The organization of the line regiments, which constitute the greater part of her Regular army, is based upon a territorial distribution. Great Britain is divided into eleven military districts, Ireland into three, and the Channel Islands into two, each district being under the command of a major-general. These districts are sub-divided into regimental districts and each regimental district comprises the recruiting ground, the depot, and the militia battalions of a territorial (*i. e.*, line infantry) regiment. Such regiment consists of two battalions of Regular troops, and two or more battalions of militia.

The system of making geographical divisions of the country and basing the organization of the military forces upon such geographical distribution is of comparatively recent introduction. It corresponds to the system employed in the nations of Continental Europe, and possesses various advantages which are lacking in this country, where no such system exists. The result of this distribution is that each Regular line regiment is largely composed of men recruited in the same district, and experience has shown that a large percentage of recruits come from the militia battalions of the same district. By having a definite home station and depot, it is possible to include in the organization of a territorial regiment both Regular troops and militia battalions. Under our system such an arrangement would be impracticable, certainly in time of peace.

In addition to the Regular army the most important reserves and volunteer forces are the following:

1. *The Army Reserve.*—This consists of men who have served with the colors, but have not completed their full term of enlistment.

2. *Militia Reserve.*—This consists of a portion of the militia, liable to foreign service. The members of the militia are not as such liable to this duty, but such members as voluntarily signify their desire to assume it may become enrolled in the Militia Reserve, and are then part of the reserves of the Regular army.

3. *Militia.*—This is composed of citizen soldiery who voluntarily enlist for a term of six years. Upon enlistment

they receive nine weeks' training and subsequently twenty-eight days in each year. They are assembled at the Regimental Depot, and perform their twenty-eight days of service, but are not called together except in an emergency during the remainder of the year. The infantry battalions of the militia are attached to the different regiments of the line, and since 1870 they have formed an integral part of the infantry brigades. They are only liable for home service and for garrisoning the fortresses of the Mediterranean.

4. *Yeoman Cavalry*.—This is designated as a branch of the militia ; but is subject to somewhat different conditions and probably in most respects resembles the volunteers.

5. *Volunteers*.—There are 211 battalions of Volunteers, each attached to a Regular regimental district. The Volunteer battalions are not included in the Regular territorial regiment, as are the militia, but are separately brigaded. In 1890 there were 31 Volunteer brigades, each consisting of five or more battalions, and each commanded by a colonel of the auxiliary forces.

This portion of the organized military forces had its inception less than fifty years ago, and at the outset the organizations met with much opposition. They were discredited in military circles, and received no encouragement from the government. On the contrary, they were rather regarded with disfavor. In spite of obstacles the organization of bodies of volunteers continued and in course of time their value from a military standpoint was recognized, and now they hold a regularly accredited position in the scheme of national defense. The sum of thirty-five shillings annually is paid to each organization for each efficient man, and the sum of two pounds, ten shillings for each efficient officer. On January 1, 1890, there were reported 216,999 efficient and 7022 non-efficient.

These troops are liable for service in Great Britain in case of threatened invasion, but are not liable for foreign service.

An official examination as to the organization of the armies and reserve forces of foreign countries was made by the late General Emory Upton, and his report, rendered in 1878, contained certain recommendations for the modification of our own existing systems. Among other things he advised that the

country should be divided into military districts substantially upon the plan adopted in Great Britain and in the countries of Continental Europe; that the regiments of our Regular army should be distributed among such districts and each regiment identified with the particular district in which it should have its depot and recruiting ground; and further that, in each of such districts, battalions of "National Volunteers" should be organized, each battalion to be attached to and form a reserve for the regiment of the Regular army assigned to such district.

As already observed, the limitations of the present inquiry do not permit of considering modifications of this character.

V.

THE PLAN PROPOSED.

The plan proposed contemplates three salient features :

(1) A modification of the existing conditions applicable to the appointment of officers and the enlistment of men so as to secure greater efficiency in the individuals ; (2) A modification of the existing methods of instruction and training ; and (3) A modification of the methods heretofore adopted for determining what portions of the National Guard shall be called into service in the event of war.

To secure suitable officers is, in the opinion of the writer, the most important feature of this or any other plan for making the National Guard an efficient factor in the military strength of the country.

The enlisted man can be readily obtained, and with competent officers, speedily trained : the efficient officer is not so obtainable.

By the Constitution, the appointment of officers for the militia is reserved to the respective States, and consequently no plan can be enforced which directly violates this provision. It is possible, however, to secure for the National Government such a power of supervision over the appointments and such control over the officers after appointment, as to insure the election of fairly competent men and the exclusion from higher rank of officers who have not had some experience of Regular army methods. This could be accomplished by making the appropriation of the Federal Government to the support of the

militia of the several States conditioned in each instance upon the adoption and enforcement by the State of the regulations prescribed by the Federal authorities. The details of this method are more fully discussed in another part of this article.

At the present time, the elective system is that generally in force with reference to officers of the National Guard. That is, the company officers are elected by the men of their respective companies, and the officers of higher grade are elected by subordinate officers. This method is open to grave criticism, and the evils resulting from it have been repeatedly pointed out. Officers with a view to future promotion have sought to ingratiate themselves with the men of their command, by the arts of the politician, and not the merits of the soldier, and in some cases all military etiquette and discipline have been ignored.

The late President of the National Guard Association of the State of New York in the annual report above mentioned said:

"I believe that the greatest necessity for our National Guard is the abolition of the election of officers."

Nevertheless, with scarcely an apologist the old illogical system is retained; and many persons, while admitting its disadvantages, question whether any other system which would give better results is feasible.

If it were possible to provide officers for the National Guard by appointment exclusively from a class of professional military men who had received a course of training at West Point or some similar institution, who were paid for their services and made this their profession, good results might be attained, but practically the officers of the National Guard must be drawn from a class of men who are occupied in civil pursuits and to whom the military duties are an avocation, not a vocation.

There practically remain, then, only the alternatives of election or of appointment either by the State Executive or by the military officers of the State. The disadvantages of the elective system have been alluded to. The appointment by the State Executive would introduce the element of politics which is much to be deprecated, and the usually undesirable character of such appointments has been demonstrated in the glittering and useless staff officers to which we have become accustomed

in the past. The Governor of a State is usually a man without military education or training; if he may have had these, he has in most instances subsequently spent so much time in civil and political life that political influences will greatly influence his action. To inject political influence into the question of appointments to commissions in the National Guard, would be an unqualified misfortune.

The remaining alternative is that the officers be appointed by the officers of higher grade. Under such a system, in each regiment the line officers below the grade of major might be appointed by the majors of that regiment, with the approval of the colonel, the majors and lieutenant-colonel to be appointed by the colonel, with the approval of the brigadier-general, to whose brigade the regiment was assigned; the colonel to be appointed by the brigadier-general with the approval of the major-general, if such office existed. The appointment of officers of the highest rank would, under such a system, rest finally with the Governor upon recommendation of the officers in the two next highest grades, and it is believed that military fitness, coupled with long and meritorious service in the lower grades, would almost certainly be the determining features of such appointments. Whether or not appointments to the lowest grade should be made after competitive examination or other like process of selection is a detail that in the first instance should preferably not be controlled by rigid rules.

Assuming then, that the candidates for commissions are determined, these candidates should be subjected to a thorough examination by a competent board. This will prevent men who are wholly unfit from becoming officers, and the fact that such an examination must be faced will prove a deterrent influence to many unworthy aspirants.

The examining board should be a mixed tribunal of which at least one member should be an officer of the Regular army, and the grade and character of examinations should be prescribed and regulated by the Adjutant General or other central federal authority.

The candidate having satisfactorily passed his examination should then receive a commission which, however, should be conditioned to expire at the end of a specified period (two years

is suggested as a suitable term) unless before election or before the expiration of that period, the officer shall have performed certain specified service in addition to his regular duties as such officer. This service should consist of actual service with some regiment of the Regular army, preferably upon a practice march or in summer encampment.

The object of this requirement is to give the officers of the National Guard an opportunity to acquire practical experience in the handling of and caring for men under the direction and in the association with officers of the Regular army. It would be, perhaps, exacting too much to require more than two weeks of such service in each two years, but during these two weeks the National Guard officer would be assigned, upon his own application approved by the proper authority, to some regiment of the Regular army, and would be under the direction and command of its colonel. The colonel of such regiment would assign the National Guard officer to such duties as he saw fit, and without regard to what relative rank the National Guard officer might hold in his State organization.

The National Guard officer, through this experience, would learn practically in what particulars of training, discipline, etc., his own organization might be improved by copying the methods employed in the Regular army, and he would also have an opportunity of ascertaining in what respects his own organization would compare favorably with the Regular army. This is not an unimportant feature; the National Guard officer frequently feels a natural but unnecessary diffidence by reason of not knowing how his own action or views would be regarded by professional military men.

The National Guard officer, during this period of special service, would be associated on terms of equality and of comparative intimacy with the Regular officers of the regiment, and unconsciously would acquire a knowledge of the way in which various subjects are regarded by them; and the association would tend to promote cordial relations between the officers of the army and National Guard respectively, the results of which could not fail to be beneficial. The diffident man would gain confidence, and the half-informed, opinionated one would have his self-sufficiency desirably modified by such a course of

training. In short, the object of this service and association would tend to assimilate the National Guard officers to the type existing in the army.

In order to carry out such a plan, it would be necessary to give to the Adjutant-General—or other central authority—power to make such details of National Guard officers to regiments of the Regular army, and such central authority should be required, upon an application properly approved, to do so.

The foregoing suggestions are made with special reference to regimental, battalion and company officers, but in large part they are equally applicable to all officers of the National Guard. Mention has already been made of the importance that is accorded in the more highly organized military systems to all appointments upon the general staff. In each State there is necessarily a general staff organization which varies in efficiency; and it should be a part of the plan to make the form of organization uniform in all the States, to prune away unnecessary and merely ornamental offices, to bring the general staff of each State into close relations with the central authority, and to raise the personnel of the general staff to the highest state of efficiency.

As a part of this last feature, the appointment to a position upon the general staff should in all cases be made from among the officers of the National Guard and the selection should be from those who have displayed ability; furthermore, the officers composing the general staff should not be changed upon the inauguration of a new governor, but their tenure should be similar to that of other officers in the Guard.

THE ENLISTED MEN.

The chief modification necessary as to enlisted men, relates to the physical examination. At present the enlisted man is in theory accepted only when physically sound. Practically the requirements are inadequately enforced. Experience has shown that the effective soldier must be of a high grade of physical manhood, and the teachings of this experience have been formulated in the existing requirements for admission to the Regular army. These requirements should be strictly enforced as to candidates for admission to the National Guard.

To secure this result the surgeons upon whom the duty of examination devolves should be subjected to much more rigid examination before receiving their commissions; they should be required to report the results of all such examinations to inspecting officers of the Regular army, and such inspecting officers, for whose appointment provision would be made, should be invested with the power and charged with the duty of enforcing adherence to the rules prescribed. In providing such a system, the details might be elaborated and modified as experience should dictate. It is not practicable, within the limits of this article, to do more than indicate the general outline. The result to be attained is that the men enlisted should be on a parity as to physical soundness with those of the Regular army. If this result is attained, then it would be possible to muster into service intact a regiment or a battalion of the National Guard. The wholesale depletions which disorganized the National Guard regiments when mustered into the volunteer service in 1898, would not occur. An organization would enter the service with full complement of men who knew each other and their officers, who were already identified with the organization and had an *esprit de corps*.

In many regiments from fifty to seventy-five per cent. of the men were rejected. This necessitated delay while new recruits were secured, many of whom were also rejected, and their places in turn had to be similarly filled. The new men were for the most part without uniform and equipment, and until these were supplied, the regiment was not in condition for service. These objections also would be obviated.

INSTRUCTION AND TRAINING.

The training of the National Guard should be more particularly directed to the education and training of officers and of non-commissioned officers than of the other enlisted men. To this end the officers should be required to do a certain amount of service with the Regular army as heretofore indicated and a similar provision might with advantage be extended to non-commissioned officers of the National Guard.

The drill regulations, and military regulations including forms of military correspondence should, of course, form a part of this

instruction, but the instruction and training of commissioned and non-commissioned officers should also be directed to the various matters with which they ought to be familiar in order to insure efficiency in active campaigning. They should have some knowledge both theoretical and practical of the proper methods of drawing and distributing rations, equipments and other supplies, of cooking under service conditions, of making and policing a camp, and of the sanitary precautions to be observed. These are but illustrations of the varied features which the education of officers and non-commissioned officers should include. Attention should also be given to theoretical and practical instruction in the service of security and information, in topography and in field intrenching; in the cavalry and artillery, yet other elements should enter into the instruction.

In many of the existing National Guard organizations the officers and non-commissioned officers receive training in some or all of these departments with varying degrees of thoroughness, but probably in none is the training thorough or the facilities adequate. It should be a feature of the new National Guard that the course of training should be uniform and thorough, and to that end it should be under the direction and supervision of officers designated for that purpose by the Adjutant-General—or other central authority—the records of the work done should be submitted to a board of officers designated by him, and should be filed at regular times in his office.

In addition to the armory drills, practice marches and encampments at stated intervals should be had at which times the officers and men should receive service pay, and all expenses incident thereto should be borne by the National Government which should also provide all quartermaster's and commissary's supplies.

Wherever practicable, upon such marches and encampments a body of troops of the Regular army should accompany the National Guard forces, and it should be the aim to bring together troops from different States and to mobilize troops in provisional brigades.

Attention should be given to instruction in rifle practice and a higher general standard in this particular should be developed.

THE EMPLOYMENT OF THE NATIONAL GUARD IN THE EVENT
OF WAR.

When the call for volunteers was made by the President, in April, 1898, he apportioned the number of troops required among the various States, and it was left to the governors of the respective States to determine how the quota should be supplied. In most, if not all of the States where an organized militia force existed, this was given an opportunity to volunteer. The course adopted in New York may be regarded as typical. There the respective organizations were asked whether their members would volunteer, it being stated that if sixty per cent. of the members did so, the organization would be sent as an organization. The greater number of the organizations did so volunteer and the regiment preserved its identity in the volunteer army, although with a greatly changed personnel due to the causes previously alluded to.

In one instance, however, owing to peculiar circumstances this could not be done. In the first call for volunteers the State of New York was afforded the privilege of furnishing as its quota, twelve regiments of infantry and *two troops* of cavalry. The National Guard of New York, at that time, embraced two cavalry organizations, Squadron A, consisting of three troops, and Troop C, of Brooklyn. Troop C was designated as one of the volunteer troops, and it fell to the lot of Squadron A to supply but a single troop.

Since each of the constituent troops wished to volunteer it was thought unfair to the others to give any one this privilege, and it was determined that a volunteer troop should be made up from the members of the entire squadron. This was done and each troop was allowed to contribute an equal number of men. In selecting representatives the troop commanders were able to pass over men of family or business responsibility, and from the much more than sufficient number of men who had no one dependent upon them, and who were anxious to go, the selections were made, in many instances by lot.

It was, at the time, considered a hardship by the members of Squadron A that while all other organizations were allowed to volunteer as such, this organization alone did not share the privilege. In the light of subsequent events, however, it seems

to the writer that the plan fortuitously forced upon this organization contains a principle which may be applied most beneficially to the whole National Guard.

The plan suggested is in brief that when it shall become necessary by reason of war to call for volunteers every regiment of the National Guard shall be required to furnish a full battalion for such active service; and, further, that upon the first call for troops, no regiment shall be allowed to furnish more than this quota.

The precise method by which the companies to constitute such a battalion should be supplied affords scope for discussion. Opinions would differ as to whether four of the existing companies should be designated or whether four provisional companies should be organized from members of the regiment at large, and possibly it would be best at the outset to leave these details in each instance to the regimental commander.

The essential feature, however, is that the first levy of volunteers should contain at least one battalion of four full companies from each existing regiment, and that no regiment should be required to or have the privilege of supplying more.

The regiment would immediately proceed to fill the vacancies in its ranks resulting from the absence of those constituting the battalion in active service, and since the recruits would be fewer in number than the old men they would much sooner become drilled and disciplined, and their equipment could much better be supplied through the organization of an existing regiment than in the case of a regiment composed entirely of recruits.

The question naturally arises as to how the battalions so called into service should be utilized—whether the battalions from the National Guard should be combined into regiments, or whether each battalion should be added to a regiment of the Regular army, thereby reinforcing those regiments and at the same time possibly increasing the effectiveness of the troops so drawn from the National Guard.

In the opinion of the writer, it would be preferable for the present, and in view of the conditions now existing, to adopt the first alternative; if new conditions arise this feature of the plan may be readily modified to meet them.

Upon a second call by the President it should be optional with each regiment whether to furnish another battalion, and in a grave emergency the entire regiment might be called out.

It would be the idea and principle, however, that the National Guard regiment should retain its headquarters and organization at its armory; that its organization should continue intact, and that the regiment, as such, should only be called upon in a supreme crisis, whereas, for other purposes, each regiment should send its representative battalion as part of the volunteer army, and these battalions should be kept up to their full strength by men sent from the parent regiment to fill the gaps made by disease and death.

This was, in effect, what was done by Squadron A during the Spanish War, and the result proved satisfactory. Although before embarking for Porto Rico the volunteer troop lost 22 men, 19 of whom left in order to accept commissions in the volunteer army, the vacancies so occurring were steadily filled and the troop kept at its highest efficiency.

The portion of the regiment thus taking the field should be designated as in "Active Service," the remainder "The Reserve."

Analogies for such a feature of the plan may be found in the existing systems of other countries. In the German cavalry each regiment consists of five squadrons, which correspond in numbers and organization rather to our companies than to our squadrons. In the event of the regiment entering upon active service one of these is designated as the depot squadron, and remains at home while the ranks of the others are filled to their full complement from the depot squadrons. Recruits are received by the depot squadron, and after being drilled are sent to the other four to replace losses occurring during the campaign.

The Austrian depot battalion is also an illustration. In that country an infantry regiment upon its peace footing consists of six battalions, one of which is designated "depot battalion." Upon a war footing the regiment is converted into two, one designated the "field regiment," consisting of three battalions, and the other designated the "reserve regiment," likewise consisting of three battalions. The depot battalion upon the peace

footing consists of five companies—one more than the other battalions—but it has only a skeleton organization. Each man, after three years' service with the colors, is required to serve seven years in reserve, during which time he is called into service three times for short periods; from this reserve the depot battalion, as well as the others, is recruited to its full strength when placed upon a war footing. Upon the war footing four of the companies of the depot battalion are fully recruited and become the third battalion of the reserve regiment. The fifth company of the depot battalion becomes the depot for both regiments.

Under the plan outlined this system is modified by making the reserve body the main one, and not an auxiliary to the companies which enter into the service. Inasmuch, however, as the National Guard is composed of citizen soldiers, with whom military work is an avocation only, it is believed that this modification would prove desirable under conditions quite different from those existing in the German and Austrian armies.

One result would be that the very appreciable number of men in every regiment who have domestic or business obligations would remain at home without doing violence to their pride or patriotism. Such men would be designated for service with the regiment; others without such responsibilities for active service. There would be more than a sufficiency of eager young men not subject to such obligations, and it would be only proper that such men should be the ones selected. Each class would be detailed to the most appropriate duty. Those not in active service would not feel themselves exposed to criticism as shirkers, but would be held as reserves, and as such would render good service in their organization.

When the National Guard regiments were offered the opportunity to volunteer for service in the Spanish War, a large percentage of their members were placed in a very trying position. These regiments contained married men who had wives and children dependent upon them for their living. Such men were not confined to any class or station of life, but included laborers, mechanics, clerks, tradesmen, business and professional men, each of whom depended upon his personal exertions to

support those dependent upon him. When the question of enlistment arose he was confronted by the fact that to become a volunteer he must leave his civilian occupation—for an indefinite time—and that meanwhile his pay as a soldier would be entirely inadequate to furnish the support that had previously come from his earnings. It was a hard struggle between pride, military ardor and fear of ridicule on the one side, and duty to the dependent ones on the other, and it was the more so since no case of urgent need on the part of the Government existed. Had a foreign enemy been upon our coast, had the Government been in need of every able-bodied man to resist invasion, the question would have been different; but here there were more than enough men anxious to volunteer, and it was a privilege rather than a duty that was placed before the members of the National Guard. This privilege many men were not in a position to accept without disregarding claims entitled to the highest and first consideration.

In addition to the men upon whom wives and children were dependent for support, there were many who had other claims upon them. Men who had been entrusted with large and delicate business responsibilities; men whose absence would cause financial loss or excessive care and labor to others with whom they were associated, and from whose assistance they had derived whatever success they may have achieved. To these men also the question of volunteering presented a grave problem.

On the other hand a large, perhaps a larger, part of the men in every organization were free to volunteer if they wished, and in the greater majority of cases, the opportunity was eagerly seized.

When the question was put to the companies the men whose duties at home should have dictated their remaining, were quite generally carried away by the enthusiasm of the moment and voted to volunteer. When the regiment went into the provisional camps, these men had opportunity to repent at leisure of their hasty enthusiasm. The company officers (upon various grounds) very properly secured the elimination of a large proportion of men of this class, and to this is due in part the depletions that occurred in the ranks of nearly every regiment

before it was mustered into the volunteer service, the vacancies being filled with raw untrained recruits. It is believed that the proposed system would prove a natural and effective remedy for these evils heretofore experienced.

VI.

THE CONSTITUTIONAL QUESTIONS ARISING AS TO
THE EXTENT OF FEDERAL AND STATE
AUTHORITY, RESPECTIVELY.

If it were practicable, the simplest method of dealing with the subject would be by direct legislation, the organization of the National Guard of the whole country being provided for by Act of Congress, and all necessary powers for its equipment, training and discipline being provided by such Act. Grave questions would, however, arise as to the constitutionality of such legislation, and as much the same result may probably be attained by other means, a different course is suggested.

When it was proposed that the thirteen original States should unite to form a nation the plan excited no little opposition and the framers of the Constitution found their way beset with discouragement and difficulty. The instrument as finally adopted represented various compromises and the provisions relative to the military forces are essentially of this nature.

The Constitution of the United States, Article I, Section 8, subdivisions 12, 14, 15 and 16, provides that Congress shall have power:

"To raise and support armies but no appropriation of money to that use shall be for a longer term than two years.

"To make rules for the government and regulation of the land and naval forces; * * *

"To provide for calling forth the militia to execute the laws of the Union, suppress insurrections and repel invasions;
* * *

"To provide for organizing, arming and disciplining the Militia, and for governing such part of them as may be employed in the service of the United States, reserving to the States respectively, the appointment of the officers, and the authority of training the Militia according to the discipline prescribed by Congress."

By Article II, Section 2, it further provides:

"The President shall be the Commander-in-chief of the Army and Navy of the United States and of the Militia of the several States when called into the actual service of the United States * * * ."

Alexander Hamilton in regard to these constitutional provisions said in part: (Federalist XXXV.)

"The power of regulating the militia and of commanding its services in times of insurrection and invasion are natural incidents to the duties of superintending the common defense and of watching over the internal peace of the Confederacy.

"It requires no skill in the science of war to discern that uniformity in the organization and discipline of the militia would be attended with the most beneficial effects whenever they were called into service for the public defense. * * * This desirable uniformity can only be accomplished by confiding the regulation of the militia to a direction of the National authority."

At the time at which Mr. Hamilton wrote there was great public opposition to a standing army or anything analogous to one, and the influence of this sentiment is reflected in his writing. It was feared that the National Executive might use a standing army to aid him in climbing to dictatorial powers, or that the army might assume the rôle of the Prætorian Legion and make or unmake rulers for the country. These people contended that in place of a standing army the nation should rely upon its militia, which should comprise its entire male population within certain age limits, and all of whom should be equipped and partially organized so as to be ready to meet a call for troops. This same sentiment opposed vesting in the hands of the National Executive the entire control over the militia and as a compromise we find in the Constitution the provision "Reserving to the States respectively the appointment of the officers and the authority of training the Militia according to the discipline prescribed by Congress."

It is therefore evident that—unless it be held that the National Guard is not a part of the militia within the meaning of the Constitution—Congress is not vested with full power to legislate upon the subject. It has power to provide for (a) organ-

izing, (*b*) arming, (*c*) disciplining, (*d*) calling into active service, and (*e*) governing the militia when in such service; but its powers are limited in two important particulars, for there is reserved to the respective States (*a*) the appointment of officers, and (*b*) the training of the militia according to the discipline prescribed by Congress.

Congress may provide for organizing the militia, but it must be a part of the plan or system that the officers shall be appointed by State authority. Congress may arm them and may prescribe the system and method of discipline, instruction, etc., but the authorities of the several States have the constitutional right to keep in their hands the training of their portion of the militia, and the National Government must be in a measure dependent upon the respective States for the proper carrying out of any system adopted.

This dependence upon the State governments in times of peace gives way to large and expanded powers upon occasions when it becomes necessary for the National Government to call upon the militia for active service against a foreign enemy, to suppress insurrection, or execute the laws of the Union. When these contingencies arise, the powers of Congress are practically untrammelled, and the powers of the President, as Commander-in-chief, supersede those of the Governors of the respective States.

The decisions of the Supreme Court of the United States are to this effect.*

By the decision in *Martin v. Mott* a contrary opinion expressed by the Justices of the Supreme Court of Massachusetts in 1812, is directly overruled, and the principles enunciated by the Federal Court have subsequently been expanded in other tribunals.†

It would therefore appear that while the constitutional powers of Congress and of the President are adequate for dealing with the militia when it becomes necessary to call them into active service, yet those powers are much curtailed upon the subject in time of peace. The National Government is

* *Houston v. Moore*, 5 Wheat. Rep., 1.; *Martin v. Mott*, 12 Wheat. Rep., 17.

† *Kneedler v. Lane*, 45 Penn. State Rep., 238. Opinion of the Justices, 14 Gray (Mass.) Rep., 614; 21 Wisconsin Rep., 628.

given power to use this weapon, but it is left with the State governments to shape and fashion it into serviceable form.

It is not impracticable, however, to secure for the national authorities such further powers as may be necessary to secure the objects set forth in a previous portion of this paper. Certain powers are reserved to the several States by the Constitution, but this is not an absolute prohibition upon the National Government from exercising these powers in any event.

The military force of the National Government is broadly divided into two parts. The standing army, which in time of peace has been so limited in numbers as to be little more than adequate for a police force for the frontiers and for its garrisons, including our coast defenses. The other is the reserve military force, and embraces potentially every able-bodied male citizen capable of military service.

Every independent nation in order to preserve its independence and maintain its position as a sovereign state must have the right to call upon its citizens for military duty should the exigency arise. The right is inherent, and based upon necessity. It is a necessary attribute to the power to enact legislation, to levy taxes and to treat with foreign powers. When a nation is erected with these powers it is incident to and implied with them that the nation shall have the right to enforce its laws and its rights in the community of nations; and the measure of its force is the number, spirit and resources of its people.* In the series of compromises that resulted in our Constitution, this fundamental necessity was recognized, but while conceding the right of the Federal Government to the service of the whole military force of the country, it was endeavored to retain to the States a share in the preparation of those forces.

If, however, a State should wholly fail and refuse to take any part in organizing and training the militia within its territory, it cannot be that the National Government would thereby

* In one of the prevailing opinions delivered by the Supreme Court of Pennsylvania, it is said: "The right to the means carries all the means in possession of the nation. Every able-bodied man is at the call of the government, for assuredly in making war as there is no limit to the necessity, there can be no limit to the force to be used to meet it. Therefore, if the emergency require it, the entire military force of the nation may be called into service." (*Kneecler et al. v. Lane et al.*, 45 Penn. State Rep., 238.)

be deprived of the power and right to use this portion of the nation's strength in case of need. Assuming that Congress should prescribe a system of organization for the militia of the several States, and that in one particular State the militia should be allowed to remain entirely without organization—in the event of insurrection or invasion, would the National Government be powerless to avail itself of this portion of its reserve strength? Assuredly not. Were the Constitution silent upon this point it must be held that this is one of the implied powers incident to national existence.*

Pursuing the inquiry, what then are the powers of the National Government with respect to such portion of the population, prior to an outbreak of hostilities? Must Congress remain supine or powerless until an enemy is at the door, and then take the first steps for organizing, training and equipping a force that should have been ready at its hand? The laws of self-preservation clearly indicate that as incident to the power to use any portion of its population for its defense in case of hostilities, it has the power to take the necessary steps for preparing this potential military force that when called upon it may be an effective arm of defense.

This has been held by the Supreme Court of the United States.†

Although there is reserved to the State the right of appointing officers of the militia in time of peace and the authority of training their militia organizations, yet these powers must be exercised in conformity with the statutes which Congress has undoubted authority to enact upon this subject. Congress has power to enact legislation for "Organizing, arm-

* The Supreme Court of Wisconsin in *re Griner*, in passing upon this very question, said: "Although we have no laws in this State regulating the manner of executing a draft, yet the President under the powers conferred upon him by congressional legislation had authority to draft and call into the field our quota of militia to quell the rebellion and execute the laws of the Union."

† In *Martin v. Mott*, 12 Wheat. Rep., 17, Mr. Justice Story, writing the opinion said (p. 27):

"The power to provide for repelling invasions includes the power to provide against the attempts and danger of invasion, as the necessary and proper means to effectuate the object. One of the best means to repel invasion is to provide the requisite force for action before the invader himself has reached the soil."

ing and disciplining the militia," and if it exercise this power, the reserved powers of the State for appointing officers and for training the militia must be exercised in conformity with the requirements of the federal statutes, which, in this respect are paramount.*

Thus, if Congress prescribe the numbers which shall be embraced in the organized militia of a particular State, and the ages and qualifications of the individuals of which it shall be composed, the State has no authority to modify these regulations.

If Congress prescribe the number of regiments, battalions or companies in which the organized militia of a State shall be enrolled, and their character as infantry, artillery or cavalry, this also cannot be changed by the State.

If Congress prescribe the number and grades of officers to be appointed to each of such organizations, this provision cannot be exceeded or altered. If Congress prescribe the discipline for the militia, a conflicting provision, made by the State, would not be valid nor enforceable.

The reserved powers of the State are therefore in no sense absolute.

In time of war or insurrection these powers may even become almost a negligible factor. If authorized by Congress the President has power to call out the militia and his discretion in determining whether the necessity requires or justifies such action is absolute, and will not be questioned by the courts.†

* One of the Justices of the Supreme Court of the United States has said upon this subject :

"But when once Congress has carried this power into effect, its laws for the organization, arming, and discipline of the militia, are the supreme law of the land ; and all interfering State regulations must necessarily be suspended in their operation. * * * It is conceded on all sides, and is, indeed, beyond all reasonable doubt, that all State laws on this subject are subordinate to those constitutionally enacted by Congress, and that if there be any conflict or repugnancy between them, the State laws to that extent are inoperative and void."

See also Opinion of the Justices, 14 Gray's Rep. (Mass.)

† In *Martin v. Mott*, 12 Wheat. Rep., 17, Mr. Justice Story, delivering the opinion of the Supreme Court of the United States said :

"The power thus confided by Congress to the President, is, doubtless, of a very high and delicate nature. A free people are naturally jealous of the exercise of military power, and the power to call the militia into actual service is

If he so elects, and if Congress has not otherwise prescribed the mode, the President in such case may issue orders to any individual officers of the militia. In the past it has been customary to issue a requisition to the Governor of each State, but this course is not necessary. This was held by the Supreme Court of the United States.*

It has been held that in such a case the Governor of a State acts not as the Chief Executive of the State but as an officer of the National Government and under the directions of the President; and that the source of his authority is from the nation rather than the State.†

certainly felt to be one of no ordinary magnitude. But it is not a power which can be executed without a corresponding responsibility. It is, in its terms, a limited power, confined to cases of actual invasion, or of imminent danger of invasion. If it be a limited power the question arises, by whom is the exigency to be judged of and decided? Is the President the sole and exclusive judge whether the exigency has arisen, or is it to be considered as an open question, upon which every officer to whom the orders of the President are addressed may decide for himself and equally open to be contested by every militiaman who shall refuse to obey the orders of the President? We are all of opinion that the authority to decide whether the exigency has arisen, belongs exclusively to the President, and that his decision is conclusive upon all other persons.

"He is necessarily constituted the judge of the existence of the exigency in the first instance, and is bound to act according to his belief of the facts. If he does so act and decides to call forth the militia his orders for this purpose are in strict conformity with the provisions of the law; and it would seem to follow as a necessary consequence, that every act done by a subordinate officer, in obedience to such orders, is equally justifiable."

* In *Houston v. Moore*, 5 Wheat. Rep., p. 15, Mr. Justice Washington, delivering the opinion of that Court, said with reference to the powers of the President under existing legislation:

"The President's orders may be given to the chief executive magistrate of the State, or to any militia officer he may think proper; neglect or refusal to obey orders is declared to be an offense against the laws of the United States, and subjects the offender to trial, sentence and punishment, to be adjudged by a court-martial, to be summoned in the way pointed out by the articles and rules of war."

Mr. Justice Johnson, delivering a concurring opinion in the same case, said:

"When distributed by the States under their own officers the general government have the right, if they choose to exercise it, of designating both the officer and private who shall serve, and to call him forth or punish him for not coming." (See also *in re Griner*, 16 Wisc. Rep., 423.)

† In 21 Wisconsin Reps., 628, the Supreme Court of Wisconsin, affirming the validity of an Act of Congress, said:

"The rules and regulations respecting enrollment and drafting the militia

Furthermore, the President may remove any officer of militia when called into service, replacing him by his own appointee and may require the service of any part of the militia in any part of the Union.*

The governing of the militia in actual service—which embraces a wide field of powers—is expressly committed to Congress by the Constitution.

The conclusion at which we arrive by the steps indicated rather than discussed above, is that the reservations to the respective States which we find in sub-division 16 of Section 8 of Article 1 of the Constitution, are not conclusive of a grant of like powers to the Federal Government, and from this consideration we derive two additional propositions, viz.: (1) the mode in which the States are to exercise these powers may be in large measure directed and controlled by Congress, and (2) the States may, if they so elect, exercise these powers through Federal agencies.

Through these propositions the details of the plan outlined in this article may be readily demonstrated to be in harmony with the provisions of the Constitution.

VII.

SYNOPSIS OF PROPOSED LEGISLATION.

To accomplish this end, Congress should enact legislation embracing the following features:—

1. The designation or creation of a central authority for the purpose of executing the enactments of Congress relative to the militia.

The designation of the Adjutant General of the United States as such authority and vesting him with such additional powers as may be required, might be adequate, or it might be preferable to create a new official with some such designation as Adjutant General of Militia of the United States.

adopted by the President and promulgated through the War Department are valid, and if valid, the draft commissioner appointed by the governor was an officer of the United States. * * * If the draft commissioner was a federal officer, *the Governor in executing the draft acted not under State but under national authority and was also an officer of the United States obeying the orders of the President.*" (Citing 12 Wheaton, 33.)

* 2 Story Const., Sec. 1197; Highsmith v. Ussery, 23 Tex. Rep. (Supp.) 108.

2. A provision that in every State where the State authorities shall carry into effect the organization provided for by this Act, and shall provide for the appointment of officers and for the training of the National Guard in the manner provided in the following sections of this Act, the uniform, arms, equipment, tentage and supplies of all kinds necessary for the proper maintenance and training of the National Guard in such State, shall be supplied and issued to it from the office of the central authority, and for all marches, encampments and other field service to which such portion of the National Guard shall be ordered, the men and officers shall receive pay according to a schedule to be made part of the Act ; such payments to be made through the office of the central authority.

And further, that if any State shall fail to organize its militia in the manner provided by this Act, or shall not make provision for the appointment of its officers and the training of its portion of the National Guard as herein provided, no issue shall be made to such State or the militia thereof, of any arms, equipment or other supplies, and such State shall receive no part of the moneys appropriated for the maintenance of the National Guard.

The result of those provisions would be to render it an object for the respective States to adopt the system provided by the National Government and it is believed that all would do so within a comparatively short period. In the opinion of the writer, it would be impolitic for the present to attempt to enforce all the details of this system without the concurrence of the State authorities, even if no question existed as to Constitutional authority.

Irrespective of whether a State concurred in enforcing the proposed system, certain features of the plan would become effective ; the number of regiments in each State and their character as infantry, cavalry, etc., would be fixed by the central authority, and when so specified would not be subject to modification by State authority. A State might perhaps organize other troops, it is true, but they would form no part of the National Guard.

The same would be true as to officers—only those authorized by the central authority would have any standing as National

Guard officers. This distinguishing characteristic would go far to doing away with unnecessary officers.

3. A definition of the militia:—the present definition is perhaps adequate.

4. A division of the militia into organized and unorganized:—the organized militia to be designated as the National Guard, to constitute a reserve to the Regular army, and to be subject to the provisions of the Act.

5. The authorized strength of the National Guard in each State to bear a specified relation to the population of the State. Subject to suitable restrictions, however, discretion should be vested in the central authority to authorize an increase in the number apportioned to any particular State.

It is suggested that a provision authorizing 425 members of the National Guard for each member of the Lower House of Congress would produce satisfactory results. The number of members in the Lower House of Congress is slightly in excess of 350, and roughly speaking, an organized force of 150,000 men would result from an apportionment in the several States of 425 members of the organized militia to each representative of the Lower House of Congress. Inasmuch as the estimated population of the United States, at the present time, is upwards of 75,000,000, such an apportionment would also result in providing approximately one member of the organized militia from each five hundred inhabitants.*

* This, compared with the organized militia as it existed prior to the Spanish War, would give the following comparisons :

NAME OF STATE.	Organized Militia in 1897.	Organized Militia under Proposed Plan.	NAME OF STATE.	Organized Militia in 1897.	Organized Militia under Proposed Plan.
Alabama.....	2,488	3,400	Nebraska.....	1,158	2,550
Arkansas.....	2,020	2,550	Nevada.....	368	425
California.....	3,909	2,975	New Hampshire.....	1,305	890
Colorado.....	1,056	890	New Jersey.....	4,297	3,400
Connecticut.....	2,739	1,700	New York.....	13,894	14,450
Delaware.....	438	425	North Carolina.....	1,537	3,825
Florida.....	1,134	890	North Dakota.....	467	425
Georgia.....	4,439	4,675	Ohio.....	6,004	8,925
Idaho.....	508	425	Oregon.....	1,428	890
Illinois.....	6,260	9,350	Pennsylvania.....	8,521	12,750
Indiana.....	2,875	5,325	Rhode Island.....	1,315	890
Iowa.....	2,470	4,675	South Carolina.....	3,127	2,975
Kansas.....	1,463	3,400	South Dakota.....	696	890
Kentucky.....	1,371	4,675	Tennessee.....	1,696	4,250
Louisiana.....	2,693	2,550	Texas.....	3,023	5,526
Maine.....	1,345	1,700	Utah.....	580	425
Maryland.....	1,725	2,550	Vermont.....	743	890
Massachusetts.....	5,154	5,525	Virginia.....	2,739	4,250
Michigan.....	2,896	5,100	Washington.....	737	890
Minnesota.....	1,894	2,975	West Virginia.....	965	1,700
Mississippi.....	1,795	2,975	Wisconsin.....	2,711	4,250
Missouri.....	2,349	6,375	Wyoming.....	356	425
Montana.....	632	425			

6. The number of regiments, battalions, companies, etc., into which the National Guard of each State should be organized, and their character as infantry, cavalry, artillery, etc., to be determined by the central authority, and such distribution be subject to change by the same authority.

7. The number of battalions or squadrons in each regiment, the number of companies or troops in each battalion, the number of men in each company or troop and the number and grades of officers in each organization of the National Guard to be prescribed by the same authority.

This would produce uniformity in this important feature, and would prevent the cheapening of titles by creation of positions with purely nominal functions.

8. The qualifications for enlistment in the National Guard to be those prescribed for the Regular army, the physical examination of the applicant to be conducted by medical officers designated by the central authority and duplicate copies of all reports as to physical examination to be filed in the office of such central authority.

9. The oath of enlistment and the oath of office in every case to include the same subject matter as that embraced in the like case in the Regular army. Additional subject matter should be optional with the State authorities.

10. Uniform, arms, and equipment:—these should be the same throughout the country and should be regulated by the central authority. In the event of a State adopting certain proposed legislation, these should also be provided by the National Government without expense to the State. In such event they should remain the property of the General Government and inspections of such supplies so issued should be had periodically by officers designated by the central authority.

11. General regulations upon the subject of drills, marches, encampments and other training, etc., should be issued by the central authority. If the legislation proposed be adopted by a State, it should be a feature of such legislation that all drills, instruction and other training should be under the general supervision of officers designated by the central authority with powers to be defined in their appointments, and all expenses incident to such drills, marches, encampments and other in-

struction (except such as are conducted by orders of the State authorities merely) be borne by the general government.

12. Officers to be appointed substantially as follows: Company officers upon recommendation of their respective battalion or squadron commanders; line officers of the rank of major and lieutenant colonel upon recommendation of their respective colonels; colonels upon recommendation of their respective brigade commanders, if any; and brigadier generals upon recommendation of their respective major generals, if any. The officer of highest grade in each State to be appointed upon recommendation of the officers of the next two highest grades.

13. All officers to be required to pass an examination conducted by a board or boards of officers appointed or approved by the Adjutant General or other central authority. It would be desirable that at least one officer of the Regular army should be appointed upon each such board. No appointee should receive a commission unless favorably reported on by such examining board.

14. Commissions to officers should be issued through the office of the central authority and bear his signature in addition to that of the Governor of the State. In this connection it should be prescribed that officers of the National Guard should be required to perform the brief service with the Regular army outlined in an earlier part of this article.

15. In the event of its becoming necessary to call the National Guard into active service, the orders of the President should be issued directly to the National Guard officers and it should be prescribed that in such calls the system outlined in another portion of this article be enforced.

It is not the purpose to withdraw the National Guard entirely from the control of the State authorities, but to enlarge the scope of the power and control of the National authorities. Occasions often will arise where the State Executive may find it necessary to call upon the militia to enforce the laws and suppress riot and insurrection. In such cases it is contemplated that the organized militia—the National Guard—shall be at his disposition as fully and for all purposes as heretofore.

Similarly the powers of the State authorities would be in no way limited with respect to ordering, directing and gener-

ally providing for parades, encampments, marches, musters, drills, etc., except that the action of the State authorities must not be in violation of or inconsistent with the provisions of the federal statute. Expenses incurred in connection with purely State functions would be borne by the State and not by the general government.

It may be said that such a divided control will lead to embarrassments and possible conflicts of authority. In answer we say that this effect is a result of the provisions of the Constitution of the United States, that the legislation now in effect has produced just such questions, that probably no legislation would be free from them, that the preponderance of advantages seems likely to be secured by such plan, and that the embarrassments and conflicts of authority may readily be obviated in practice after the system is once in operation.

IN WHAT WAY CAN THE NATIONAL GUARD BE
MODIFIED SO AS TO MAKE IT AN EFFECTIVE
RESERVE TO THE REGULAR ARMY IN BOTH
WAR AND PEACE.*

BY MAJOR DANIEL M. TAYLOR, ORD. DEPT., U. S. ARMY.

WHEN, after the close of the Civil War, the great problem of determining the best method to be adopted to bring about the resumption of specie payments was vexing the minds of the financiers and statesmen of this country, the "Sage of Chappaqua," the late Horace Greeley, gravely announced it as his opinion that the best way to resume specie payments was to resume. This at first was considered a trifling jest, but after some years of further discussion had passed, and nothing better had been proposed, the Administration in power decided to follow this advice, and, doing so, proved its efficacy, for since the first resumption there has been no difficulty in this regard.

If it were sufficient then to give a terse reply to the query made by the caption of this essay, it would be sufficient to say, "Have a NATIONAL GUARD," and leave the emphasis of the large capitals of the reply to suggest their story. But as this is not sufficient I shall take up my parable with the idea thus suggested as a text. For an effective reserve for a truly National or Regular army; for "an ever present help in time of need" to the nation, a National Guard is needed; not one such as is the present heterogeneous congeries of military organizations, which is dignified by that name in many of the States of the Union, and which is almost universally regarded by the non-military part of our population as the palladium of our national existence. This aggregation of military units, which is all we have in this country to take the place of the Landwehr or the Reserves of Continental Europe, is essentially

* This Essay having been considered as third in order of merit in the competition for the prize of 1899, is printed by direction of the Executive Council.

not a National Guard, but an inchoate mass of State Guards. Each one of these contributing to the resultant mass all of its individual weaknesses and defects, the sum of which becomes appalling, while the merits which shine brightly perhaps in each State Guard are so different in character and kind that they are but too apt, by neutralizing each other, to disappear, or be rendered inconspicuous in the mass. Without uniformity, without cohesion, with no co-relation in the various States, and with no general law of the United States to produce such, it is alarming to think of the result of the sudden assembling of the so-called National Guard of the United States as a force with which to meet an invasion by one of the trained armies of Europe!

It has been the writer's privilege to see rather more than falls to the lot of most of the National Guard of the various States, and as a trained soldier it has been painful for him to contemplate such a possibility as is above alluded to, with its inevitable consequent destruction of as fine material for soldiers as the world can produce, and he has given much thought to the question. If the ideas which he desires to here set forth shall in any degree prevent such consequences he will feel that he has not lived in vain. Before prescribing for the cure of the disease it is well to examine the patient and diagnose the complaint, and before we go further in this matter it will not be out of place to give a cursory glance at the present condition of the National Guard. The grand aggregate for 1898, as given by the returns received by the Adjutant General of the Army (Sen. Doc. 105, 55th Congress, 3d session) shows, on paper at least, 101,535 men, of whom 6868 are commissioned officers, 45 being general officers. The State of South Carolina with an enlisted strength of 2412, not a brigade, reports 2 general officers. Texas, with 2739 enlisted, reports 35 staff officers and 3 generals; Louisiana, with 986 enlisted, reports 2 generals, and Iowa with only 36 enlisted men, has 2 generals and 17 general staff officers. It is not necessary to multiply examples of this lack of uniformity of organization. The table is in print for those to read who will, and by itself it shows that this lack is so great, no matter how fine be the personnel of the individuals, as to render such a force when first brought together

as an army as valueless as a rope of sand. And here it is not out of place to insist upon the point that in wars of the present day, time is a most essential element, and that it is not sufficient to say that the men being ready, organization can easily and promptly be pushed forward to such a point as to render them available. We can have millions of men if a considerate foe will allow us time to enroll, equip, drill and organize volunteers, but time is just the element which a wise foe will not allow us, and if our militia is to be of any use to us, as an effective reserve, it must be that kind of force which can give us an effective "first line" in 48 hours.

"With the introduction of steam, electricity and arms of precision, the 'pomp and circumstance of glorious war' went out, and with them departed the dignified slowness which characterized military operations of the period when combatants took their time about wars, and their duration was from seven to thirty years. Modern wars are short and sharp.

"In this connection the following dates are instructive.

Year.	War.	Declared.	Decisive battle.	Days.	
1859	France and Austria	May 3	Solferino.....	June 24	52
1864	Dano-German	Jan. 16	Fall of Duppel..	April 18	93
1866	Austro-Prussian	June 16	Sadowa.....	July 3	17
1866	Austro-Italian	June 20	Lissa.....	July 20	30
1870	Franco-German	July 15	Sedan.....	Sept. 2	49

So that we see in many instances the fate of war has been decided, and its decisive battles fought in fewer days from the declaration of war than is needed in ship-building England to prepare the plans and let the bids for one class of unarmored vessels." (From a lecture delivered in San Francisco in 1885 by Capt. D. M. Taylor, Ord. Dept.)

To this list can to-day be well added the astonishingly brief duration of our own last war, wherein the geography of the Pacific Ocean and the Caribbean Sea and the policy of a great nation were permanently changed in the 113 days between the beginning of the war on April 21, 1898, and the signing of the protocol on August 12, 1898. In fact, the real time required for this astounding change was only that between April 21 and July 11th, when Toral, seeing that further resistance was futile, agreed to surrender, which he did formally on the 17th.

History then tells us in terms not to be misunderstood, that we cannot delay matters of organization until organized troops are needed, and the foreseeing mind of the first President was firmly impressed with this fact. It was in 1790 that he said in his message to Congress, "To be prepared for war is one of the most efficient means of preserving peace. A free people ought not only to be armed but disciplined, to which end a uniformed and well-digested plan is requisite." This was when urging the passage of the militia act which became law in 1792, and in 1793, the same great mind seeing already many of the failings of this hastily enacted legislation, gave forth this warning, practically unheeded to this day: "It is an inquiry which cannot be too solemnly pursued, whether the act (that of 1792) has organized them so as to produce their full effect."

President Jefferson in 1808 said in his message to Congress: "For a people who are free, and who mean to remain so, a well organized and armed militia is their best security. * * * Some of the States have paid a laudable attention to this object; but every degree of neglect is to be found among the others. Congress alone has the power to produce a uniform state of preparation in this great organ of defense."

Can we be surprised then, nay, would it not be surprising were it otherwise, that we find in 1899 a lack of uniformity of organization, and consequently a National Guard which is absolutely unworthy of consideration as a reserve for the Regular army, when we turn to the Statute book of the United States, and find that the injunctions of Washington and Jefferson have remained unheeded to the present day, and that the laws, enacted over a century ago, and then only experimentally, in spite of the changes of all kinds that have come over the country in a hundred years, have been allowed to remain practically unamended. They are too long to be recited here, but as many, nay, most of our citizens are unacquainted with their provisions they are inserted as an appendix, that the law-abiding male citizens between the ages of 18 and 45 should know that they are violating the law of the land in not being enrolled and "constantly provided with a good musket or firelock, of a bore sufficient for balls of the 18th part of a pound, a sufficient bayonet and belt, two spare flints, etc."

It is remarkable that to many of our people the militia should be a joke when, in this day of smokeless powders and breech-loading rifles, when dynamite has taken its place as a recognized agent of warfare, the statutes in force gravely provide for companies of grenadiers; for such individuals as "bombardiers"; and busy themselves with the details of the covering of the officer's holsters with bearskin while directing that the "color and fashion" of the "regimentals" be settled according to the taste of "the brigadier commanding the brigade to which they belong."

In view of this state of things is it any wonder that each State has found it convenient to legislate for its own militia, which it usually calls National Guard, though some of the States have always retained the name militia.

The use of the name National Guard implies a recognition on the part of the States of the fact that there is a need for a national organization, although sentiment has, up to the present day, demanded that the quotas of the several States for such an organization shall be, until urgent need demands their service with it, State troops and nothing else. But while this has been jealously insisted upon, the fact comes urgently and insistently to the front that war, or even its resemblance, is an expensive amusement, and although the States have always jealously guarded their rights with regard to the employment of these forces; though the laws of the U. S. (Sec. 1642 *et seq.*) regulate strictly the occasions and manner of such employment, yet it was early deemed proper that for the safe-guarding supposed to be thus afforded the general government should pay, and therefore in 1808 an annual sum of \$200,000 was provided, which was subsequently doubled. This brief *résumé* is intended to give a general idea of what the National Guard or militia is in its relation to the United States, and even from the defects revealed by this cursory glance it is apparent that under existing conditions it is impossible to ever make of this mass of ill organized men, opulent though its individual members be in all the qualities required for soldiers, an army fit to compete with the trained soldiers of England or of any of the European powers. All that it can do is to give us men, with more or less of military training, and in many cases with as much to be un-

learned as to learn before they can be considered an effective reserve.

The question then is what action must be taken by the United States to alter and improve this condition of affairs for, as has been shown, such alteration and improvement must be the work for days of peace, and not of war time. The homely proverb so aptly quoted by Abraham Lincoln tells us, "It is no time for swapping jack-knives when crossing a stream." Manifestly action is needed both in State and national legislatures. In the State legislatures it is of vital importance that legislation should be enacted which will entirely remove the Guard, and those who are most intimately and directly connected with its management and maintenance, from the domain of politics. It is a prime essential that the Adjutant, Inspector and Quartermaster Generals should not be political appointments, but men of a business training, which will fit them for their respective duties, and such men, when found, should not be subject to change according to fluctuations of political opinion in their State, or even at the whim of a governor, whose personality changes, in most of the States, much more frequently than does the political complexion of the State itself. In short, these officers should not be considered as they too often are, as members of a personal staff, but rather as State officials who, while serving, of course under the supervision of the Governor, and as his subordinates, should have a tenure of office only terminable by usefulness and capacity. In too many of the States the election of a new governor means an upsetting of the military establishment within its borders, so far as the higher officers at least are concerned, and the existence of a National Guard is looked upon by a new incumbent of the gubernatorial office, as a means for rewarding, with rank, title and the privilege of wearing uniform, personal friends and political servitors, rather than as an instrument needful to be maintained in high efficiency for both State and national safety and honor.

It is admitted that the States will probably regard with disfavor at first, any intrusion in such a matter and be disposed to resent any attempt on the part of the general government to limit or restrain the appointing power from exercising his will in the matter of appointments, and this can only be met with

success by the United States, by the assertion of its concurrent jurisdiction over a guard which, although both a State and a National Guard to-day, may be wholly national to-morrow. And this assertion can be least offensively, and most forcibly emphasized by prohibiting by law any State from participating in the division of the annual appropriation made by the United States, unless its laws concerning the National Guard conform in their requirements to the laws of the United States concerning the National Guard, which laws must be enacted before even a beginning of real efficiency can be looked for.

The United States devotes annually the sum of \$400,000 to the militia, for the purpose ostensibly of "arming and equipping" a reserve force. This sum is apportioned among the beneficiaries, not according to their necessities; not according to their merits; not, as would naturally be supposed would be the case, according to the number of troops the States respectively maintain, but in proportion to the number of representatives the various States are entitled to in Congress. Could anything be more absurd? No supervision is provided, apparently, over the issuance of stores to be charged against this appropriation, nor inquiry made as to whether they are needed or not, the care exercised by the United States being to see solely that no overdraft shall be made, and a State whose force is not fully supplied with arms may draw its entire allowance in ammunition if it is desired to devote much attention to rifle shooting, or in camp equipage which may be used for other purposes than that for which it is intended. In short, the United States makes this appropriation and says practically, by the attitude it takes, that it has no further interest in the matter than to see that no State gets more than its share. Under the present apportionment of the annual appropriations (see circular from the War Dept. July 1, 1899) the State of Missouri, whose enlisted force is 2493 men, is entitled to receive on account of her representation of 17, \$14,654.41, while New Jersey with her finely equipped and well organized guard of 4190 men receives from the United States of this appropriation only \$8626.12, and Tennessee, which on February 6, 1899, had made no report of her force, and which when the last returns were received, had only 1704 enlisted men, receives \$10,351.35 as against Rhode Island which,

with 1127 enlisted men, only receives \$3450.45. It would be difficult, in face of these facts, for the United States to inspire the belief in the States themselves that the appropriation is made and allotted to the National Guard for actual service to be rendered by it.

The appropriation is entirely too small. The main value of a National Guard to the United States lies in having an organized, equipped, and disciplined body of men, ready, with the Regular army to constitute a first line of defense; a body of "minute-men," so to speak, who will be ready, on call, to take the field, and withstand the attack of any invading power, and avert disaster while the larger number of volunteers, or conscripts, which may be needed, is being raised and put in fighting condition. With a country the size of ours, having in addition to its enormous coast line, frontiers conterminous with those of two other nations, this force cannot be safely less than 100,000 men, and might be much larger with good results, but adopting this force as a minimum, the United States would then, with its present annual appropriation, pay only \$4 per man per annum for its reserve. As it is, the number being over 100,000, the cost per capita is even less. It hardly needs discussion to show the absurdity of expecting to obtain valuable results at any such cost, and as a consequence the so-called National Guard is composed of troops, the main burden of whose support is borne by the treasuries of the various States, who accept the subsidy of the National Government as a mere gratuity, so insignificant as hardly to call for gratitude, and certainly not sufficiently large to entitle the donor to demand real service in return for it.

Wars in the present time are as different from the slow and stately operations of former days, as the weapons with which they are waged are from the inaccurate and ponderous fighting tools of the past. There are no more Fontenoy's, and the courteous request to the gentlemen of the French Guards to fire first, has given way to the sudden and unexpected demand for a surrender, because, in the parlance of the West, the assailant "has the drop" upon his enemy. Up to the present, in our country, the existence of so many men capable of being made good soldiers, has constituted an actual element of military weak-

ness rather than a real defense, because the average legislator, ignorant of the processes and the time needed to convert the potential into the actual soldier, has ever, with strident voice, decried the necessity of expenditures for the Regular army, or for an efficient National Guard, because we could "always raise all the volunteers needed to whip the world." It is essential that the "stitch in time" be taken, and that a sufficient force of Regulars, and an effectual reserve for it in the shape of an efficient National Guard, be provided as a "first line," behind which our splendid possibilities in the shape of gallant fighting men may be crystallized by the forces of equipment, organization and discipline, into an army. And this calls for expenditure.

The appropriation for arming and equipping the militia, should be not less than \$1,000,000 per annum, and it should be disbursed with careful attention to the mutual needs of those whom it is proposed to benefit, viz., the National Guard and the general government.

What are these needs so far as the United States is concerned? In the first place it should be settled by the War Department what it is desired that this reserve should consist of. It is not sufficient to say that it must be a given number of men, but the proportion of artillery, cavalry and infantry, which should go to take up its total, must be definitely settled, and then the quota of each State must be decided upon. It is well-known that it costs more to maintain cavalry and artillery than it does infantry, and this is manifested by the reports of the National Guard showing a deplorable poverty of the two arms first named. And yet, in certain sections of the country, if it were not for the attendant expense, it would be much easier to fill the ranks of a troop of cavalry than a company of infantry. Therefore it must be accurately determined.

(a) What the total number of the desired reserve should be.

(b) What number of each arm should go to make up this number.

(c) What is the relative expense of maintaining a man of each of the arms.

(d) What States can be called on to furnish the best soldiers of each arm.

(e) The quota of each State of each arm of service.

These preliminary investigations having been made, each State should be informed of the number of men of each arm it is expected to maintain, and the amount of the annual appropriation it will be entitled to, in case of compliance with this and other requirements. There is no objection to a State maintaining any greater number at its own expense, nor in its authorizing independent organizations to be maintained at their own expense, but it must be made clear that the number of men required to form the National Guard must be kept up, and properly equipped, as of the arms of service named, in order to entitle the State to its allotment. And in case of failure on the part of any State to do this, its quota may be reduced or forfeited, and the quota of more zealous States be increased with proportional increase of their allotments.

The present law provides that "no State shall be entitled to the benefits of the appropriation apportioned to it unless the number of its regularly enlisted, organized and uniformed active militia shall be at least one hundred men for each Senator and representative to which such a State is entitled in the Congress of the United States." Surely this would seem a small enough demand to make, for if it were complied with by each State, and no more, in this country of over 70,000,000 inhabitants, with a number of men available for military duty but unorganized reported as 8,995,825, the active militia would consist of a paltry 44,700 men. And yet, such is the lack of interest that the return of February 6, 1899, shows the state of affairs tabulated below.

STATE.	Aggregate militia force.	Representation.	Allotment.
Indiana	78	15	\$12,939.18
Iowa	58	13	11,213.96
Montana	88	3	2,587.83
Virginia	447	12	10,351.35
Wyoming	253	3	2,587.83
	<hr/> 934	<hr/> 46	<hr/> \$39,680.15

And as the law further provides that all moneys forfeited by the States shall be "covered back into the Treasury," nearly one-tenth of the appropriation for this year will not be expended for the Guard at all.

To render the proposed force effective, it is not sufficient

for it to be enrolled on paper, and uniformed. It will not suffice that it shall have armories wherein drills may be conducted, when the drill room is not required for dances and bazaars. It is not enough even that there should be drills. There must be practical field work—if possible, taking the form of practice marches—but even if this cannot be done, an annual encampment is an essential. And this should be an encampment where the features of actual camp life should be real and not simulated. In many States at present the regiments go into a camp all prepared for them, with tents pitched, company streets graded and drained, cook houses erected and under the charge of professional caterers. Instead of the sink—pestilence breeding if not properly looked after—water closets are provided, and all the Guardsman has to do in any way different from his everyday life is to sleep in a tent instead of a room. He has more drill, it is true, but his camp experience, so called, is absolutely free from experience, all difficulties and hardships being practically eliminated therefrom. He should learn, by doing it, how to pitch a tent, how to cook food, and how to eat it; how to drain his company street and ditch about his tent; when his tent cords should be tightened and when loosened, and the myriad other details which are only taught by practical experience. In order that this may be so the camp should be under the supervision of an experienced officer of the Regular army, who should have no authority of command, but whose place it should be to act as the adviser of the officer commanding, until the camp is definitely established. Then he should become, for one day, at least, and more if needed, an inspecting and mustering officer of the United States, and the number of effective, equipped, uniformed, organized Guardsmen reported by him to the War Department should be the basis upon which the allotment of the annual appropriation is made.

At present there are officers of the Regular army on detail in many of the States on duty in connection with the National Guard, and while it is not claimed that they do not do good, it is emphatically claimed that all the benefit which is possible for the Guard to derive from such details, is not obtained under the present conditions. Habitually these officers are natives of the State to which detailed, and hence are apt to be predis-

posed to a favorable opinion, which predisposition is more than likely to give color to any reports they may have to make to the War Department, and as their detail has been brought about, in many cases, by personal and social influences quite as much as by any special fitness for the duty, they are, naturally, not only predisposed to favor, as has been said, but are also handicapped in finding fault. One of the first and most essential rules to be adopted by the War Department, if the best service is to be obtained from a Regular officer detailed for duty with State troops, is that no officer shall be detailed for duty in his own State, and that any officer so detailed must report twice a year, fully and without reserve, not through the Governor of the State, but direct to the War Department.

And this brings us to a point which, in the opinion of the writer, is of the greatest importance. It is not sufficient that report be made to the War Department, for the War Department is large, its ramifications and subdivisions intricate and minute, and the question may pertinently, and should be put, to what bureau of the War Department should this report go? The writer has no hesitation in declaring his opinion that there is no existing Bureau which can properly take charge of the matter. In justification of this statement it is proper to give a brief history of recent events connected with the disbursement of this appropriation which will, it is hoped, render manifest the correctness of this statement and justify the recommendation which is to follow.

Until a few years ago the annual appropriation was held to be for supplying arms, accoutrements and ammunition alone, and, as was natural, the control of the matter rested in the hands of the Ordnance Department, but when, in 1887, the act increasing the appropriation from \$200,000 to \$400,000 was passed and it became possible, under it, to issue clothing and camp and garrison equipage, the Quartermaster General objected decidedly to having the operations of his bureau placed in any way under the control of the former. As the easiest solution of this matter the Secretary of War assumed charge of it himself, and requisitions from the Governors of States were made directly to him and he ordered the issues from the two bureaus mentioned. With the brief tenure of office which a cabinet officer is apt to

have, and the multifarious duties which he has to perform, it was manifestly impossible for the Secretary to have personal knowledge of matters connected with the militia and, as a consequence, for many years all the duties, even to the rendering of annual reports upon the subject, were performed by the officer acting as the Military Secretary of the Secretary of War; a *de facto*, though not *de jure*, head of a *de facto* bureau! Upon the relief of that officer from duty in the office of the Secretary of War, matters connected with the militia passed into the hands of the Adjutant General and it is believed that such matters are now attended to in the Military Information Division. When it is remembered what a tremendous scope the department presided over by this officer has, and how over-worked this division is, especially upon the approach of war; how numerous and onerous are the duties performed by its officers; and how much of an addition the thorough performance of all duties connected with the militia entailed, it will be seen that it was not strange that their performance was made somewhat subordinate to those pertaining more directly to the Regular army.

It is in no spirit of captious criticism that attention is invited to the first call for volunteers on the outbreak of the war with Spain, but simply to show that the value to be derived from a study of the militia, as an essential factor in the solution of the problem of the provision of an effective reserve, had not been appreciated. The State of Maine with its lumbermen and fishermen was called on for cavalry, the State of Georgia with more militia cavalry than any other State in the Union was called on for two regiments of infantry, and at the hands of South Dakota, whose plainsmen were marvels with the rifle and centaurs when mounted, was demanded heavy artillery. More almost than any other fact that could be cited does this show how unacquainted, aye, and it is feared how indifferent also, are the bureaus of the War Department to some matters connected with what should be the main safeguard of the Republic.

For this reason therefore, it is in the writer's opinion absolutely essential that there should be a new bureau in the War Department, whose chief should be entirely independent of any other bureau and responsible to the Secretary of War alone, in

whose charge all matters connected with the militia should be placed.

In the formation of this bureau the greatest care should be exercised, both in the matter of its organization and in its personnel. "*Ce n'est le premier pas qui coute*," says the French proverb, and its truth in this most important matter must be apprehended, or the usefulness of this most important measure is destroyed before it is begun. It must not be heralded by flourish of trumpet, but modestly and quietly be ushered into life by the appointment to its duties of earnest, energetic men, who appreciate its importance.

This bureau should be created by legislative enactment, and consist (with such clerical assistance as its development shows to be necessary) of one chief, to be appointed from the Regular army, for a period of four years, and who should have while holding the appointment, the rank, pay and allowances of colonel; one assistant chief to be similarly appointed from the Regular army, and to have the rank, pay and allowances, of lieutenant-colonel, and three Inspectors of National Guard, to be selected and appointed for four years by the President, from the officers of the National Guard of States having not less than 2500 troops at the time of their appointment. These inspectors should be one for each of the three grand divisions of the country, these divisions to be delimited by the Secretary of War. All of the above officers should be eligible for re-appointment. No two of the inspectors should be from the same State at one time, and no one should be eligible until after at least five years service in the militia, under commission. No inspector should be over 45 years of age. They should receive the rank, and the pay (but not allowances) of major in the Regular army; be paid by the United States; be borne upon the Army Register, and be entitled to all the consideration and privileges of corresponding rank, during the continuance of their appointments. They should be, by law, made subject to the Articles of War, and subject to trial by court-martial by courts composed of officers of the Regular army for violation of those Articles. The delicate matter of their tenure of office should receive most careful attention in the framing of such a bill as is proposed.

The writer does not attempt to disguise the fact that the

measure proposed is a most radical one, but in his opinion it is an absolutely essential one. Desperate diseases require powerful remedies. One does not successfully treat cancer with applications of rose water, and when it is seen that in February, 1899, out of the 45 States composing the Union, 10 had failed to render any returns for the year 1898, 5 report less than the number of men required to entitle them to their share of the appropriation, while several others report a number so slightly in excess of the required number as to appear to have only done just so much as to qualify them, it is evident that something radically different from present methods is required to change the existing state of things. For over a century the laws now upon the statute book regarding the militia have been in existence. They have never produced any good result and for certainly fifty years the "corn-stalk militia" and "militia training days" have been synonyms of contempt for crude, undisciplined gatherings of inefficient organizations. Something is not obtained for nothing, and no European state looks to the obtaining of an effective reserve without the payment of an adequate compensation, and there is no reason to suppose that our country can be more successful in this respect. It will, doubtless, be urged in reply to this that \$400,000 is paid by the United States. This is true, and under present conditions it is money thrown away, for it is not an adequate compensation for the return demanded. To attempt to quench a conflagration which demands a bucket of water by throwing on a cup full at a time is simply to waste the water thus thrown. It would be in the line of true economy for the United States to spend much more money annually and have something to show for it, than to squander, as it has been doing from the early days of this century, from \$200,000 to \$400,000 per annum only to find in time of need that it has a broken reed to lean on. It is useless to disguise the fact that few of the States regard the annual appropriation in any other light than a purposeless gift—what an Italian peasant would call "macaroni from heaven,"—and while some of the States by dint of ceaseless exertion, and, in many cases, large expenditure of money, have succeeded in creating a compact body of well disciplined troops, such States look upon these troops in no wise in the light of a national re-

serve, but rather as a possession directly and solely appertaining to the State, which the United States is respectfully requested to admire at a distance and keep its hands off. In others, and unfortunately these constitute the majority, the militia is regarded as a plaything for young men to amuse themselves with ; something furnishing an ornamental adjunct to the inauguration of a governor, and a means of allowing a governor to reward personal and political friends by giving them the right to assume a title and wear a becoming uniform. How seriously some of the States take their militia, can be judged when it is remembered, that within a few years past the governor of one of the largest States of the Union appointed as colonels on his staff, a very beautiful woman, and a newly born infant, and issued commissions to them.

The necessity for encampments has already been referred to. Let us now return to it. In addition to their being the places at which should be determined the number of effective troops which the State should actually be given credit for in order to determine its allotment of funds for the next year, it is most important that whenever practicable there should be encamped, with the militia, as large a body of Regular troops as possible. This, in the writer's opinion, will have a valuable effect, not only upon the militia but also a reflex action upon the Regulars. The latter will be brought into touch with their militia camp companions and will lose much of the contempt which too many of their members feel for the so-called "tin soldiers." A spirit of generous rivalry will, or can be, fostered, and it is probable that in the militia will be found a valuable recruit training school for the Regular army. It has been claimed by opponents of this scheme that the discipline of the Regulars may be impaired by the greater license necessarily allowed the members of the militia, but the result of the presence of Regulars in large camps formed during the Spanish War was to render the enforcement of discipline in the volunteers an easier matter, rather than to render it more difficult to maintain a high standard in the Regular camps. Both officers and men of the volunteers soon found, by observation of their Regular comrades, how to command and how to obey without becoming in the one case, domineering and tyrannical, or, in

the other, either sullen or servile. In camp, or on the march, the militiaman will learn from the Regular the thousand and one little details, which will not be found in any "hand-book," and which, while each one is in itself perhaps insignificant, go, in the aggregate, to make up the difference between comparative comfort and its opposite. The writer will never forget his own consternation, shortly after his entry into service, at being asked by the Inspector General, on visiting his subsistence storehouse, "How often do you roll your pork barrels?" Having had no experience he did not know that this was necessary to insure that all parts should be covered with brine and no one had thought to tell him. Fresh in his memory, too, after many years, is the remembrance of his chagrin, on a bitter cold winter march, on finding that his canteen of coffee, *filled full*, was frozen solid, while his men, having filled theirs only two-thirds full had kept the contents liquid by the constant jolting caused by marching. These are but little details, but many of them make a large aggregate of comfort or the reverse.

The militia officer will be quick to learn from his Regular brother many of the little details of camp life, the etiquette of official communication, the minutiae of company economy, while the Regular officer may perhaps, in turn, learn to discard anything in the nature of unnecessary severity to his men, recognizing the fact, that in the militia camp, it is not always a *sine qua non* for the preservation of discipline.

Such a joint encampment will also furnish an admirable means for the dissemination of useful information among the men, and this should be supplemented, during the rest of the year, by lectures in the armories. Medical officers should be detailed to lecture upon the first aid to the wounded, and military sanitation; other officers should lecture upon customs of service, and care of arms; while camp cooking should receive a large share of attention, the preparation of the various components of the ration being practically illustrated by good cooks selected from near at hand garrisons.

It is deemed extremely important not only that regimental staff officers and non-commissioned officers receive practical instruction in the preparation of the official papers, but that other intelligent officers and non-commissioned officers, should learn

how to perform these duties as well, and it should be made the duty of Regular officers to impart this information as thoroughly as possible, to selected classes of militia officers. The dismay which seizes upon the soul of the regimental staff officer, newly mustered into service, when he is confronted with the monthly papers which he is expected to prepare, is one which has deprived the service of many a valuable officer, and this may easily be obviated by such teaching as any good Regular adjutant, A. A. Q. M., A. C. S., or Ordnance officer or the non-commissioned officers acting as their clerks could give in a few days at the end of any month, when monthly or quarterly papers are in course of preparation.

It is quite possible that even with allowance made for the greater cost of artillery and cavalry, it may be difficult to get the proper quota of these arms, and in that event, in order to encourage the formation of more light batteries, and troops of cavalry, the general government, where other conditions favor such organizations, and they are only prevented from existing by the excessive cost of the guns and of horses, should furnish field-guns and horses not to be charged against the amount allowed the State under the annual allotment, the State giving bonds for their safe keeping and return when called for, except such animals as may die or become disabled from unavoidable causes, which should be properly accounted for, of course. The State should furnish armories, stables, gun sheds and forage for animals for these organizations, and harness and equipments should be charged against the regular allotment from the annual appropriation. A limited amount of ammunition for the field-guns, where practice is possible, should be supplied by the United States without charge. It has been the habit for a long time to think that volunteer batteries were an expensive plaything because, while the cost of maintaining them in time of peace was heavy, their usefulness in actual warfare was very slight, but he would be either a very obstinate or a very ignorant man who would claim this to-day in the face of the records of some of the volunteer batteries in the Civil War, and the Utah Battery in the Philippine campaign.

If the National Guard is to be, as it should be, an army capable of being mobilized for actual service, it must be com-

posed of due proportions of all three arms of the service, and the formation of batteries of artillery and squadrons of cavalry must be encouraged, for it is every bit as essential that the gunner should be at home amongst his guns and their appurtenances and the trooper be acquainted with his mount and all that pertains to his welfare, as that the infantryman should know his weapon. And it is cheaper that all this be learned in the time of peace.

A most important matter is that the officers of the National Guard should be in all respects encouraged to feel that they have a part, and an important one, to play in the National Defense. It is too often the case that when militia officers are speaking with Regular officers they speak slightly of themselves and their organizations, sometimes almost as if apologizing for their existence. This is to be deprecated. They should be taught and made to feel that "he also serves who only stands and waits," and that their part is a real and important one, and in bringing this about the Regular officer at large can be an important factor. The Regular should encourage his militia brother, and help him to cultivate his self-confidence. He should point out to him the importance of his part, and discourage any tendency on his part either to make light of himself as a real soldier, or to think that the militia is simply a social organization. It may be accepted as a military maxim, as applicable to the professional as the amateur soldier, that until a man learns to believe in himself and to take himself seriously, he will be unable to induce such faith in him in others. For this reason the officers should be encouraged to study military subjects; to make reconnoissance journeys during their vacations; to submit hints upon and plans for mobilization. In short, they should be made to feel that their position is such that any day may bring about such a state of affairs that upon one of them may depend a battle, a campaign, the national salvation.

"For the lack of a nail the shoe was lost :
For the lack of a shoe the horse was lost :
For the lack of a horse the rider was lost :
For the lack of a rider the day was lost :
And all for the lack of a horse-shoe nail."

The militiaman must be taught to regard himself in the light

of such a horse-shoe nail, and learn to feel that upon his ability to perform his duties may depend the fate of the country.

Nothing could do more in this direction than for the young men of the country to be able to look upon the National Guard as a possible ante-room to the Regular service, and this could easily be brought about by causing each State to report annually in May to the militia bureau of the War Department the name of the most deserving commissioned officer of its Guard, not over 25 years of age and of not less than four years' service, submitting full information regarding him. The claims of these representatives of their various States should be considered by the Chief of Bureau, Asst. Chief of Bureau and the senior inspector available, and five men should be selected from among those thus reported, to appear before a Board of Regular officers, and the two passing the best examination—if this be a satisfactory one—should be commissioned as 2d lieutenants in the Regular army, taking rank just after that year's class of graduates from the Military Academy at West Point. In no other way could the United States so well express its recognition of the value of the Guard, or so stimulate exertion therein on the part of its officers, while the gradual infusion into the veins of the Regular service of militia blood, would strengthen and regulate the circulation. And this matter too should be definitely fixed by a carefully considered bill to be submitted for the action of the Congress.

It has been objected that in the commissioning of officers from the ranks of the Regular service favoritism has been shown to the sons of officers. In commissioning applicants from civil life, that political influence alone has been considered. The proposed method would open yet another door to deserving applicants, while it is thought that the successive steps required, viz.: recommendation by State; examination of claims and selection of five by militia bureau; and ultimate examination by Regular army board, would certainly eliminate every possibility of selection for any other reason than established ability.

In order, however, that any of the suggestions herein offered may have value, it is absolutely essential that the States themselves must do their part in providing that their militia should furnish the proper raw material. No applicant for admission to

the ranks of the Guard in any State should be accepted, who, for either moral or physical reasons, would not be a proper person to take the field in the event of actual hostilities. There should be physical examinations to insure that the Guard is composed of able-bodied men, and to avoid the wholesale rejections of Guardsmen when needed for the service of the United States, which characterized many physical examinations at the inception of the Spanish War. It is, or should be, shame for a State to have thus proclaimed to the world, that while she has vaunted herself as having enrolled a certain number of her citizens as a bulwark of defense, that a disinterested examination by competent medical officers has demonstrated the fact that from 25 per cent. to 50 per cent. of these so-called defenders are physically incompetent to render any valuable service in the rôles which they have been supposed to play. Officers and men, the National Guard of every State, should be physically sound.

A preliminary examination having demonstrated this, it is equally important that other examinations shall determine the fitness of the officers and non-commissioned officers to hold their commissions and warrants.

The best men that ever looked through the sights of a rifle can be rendered useless as soldiers by the incompetence of their officers, and while the limits of this essay do not admit of going fully into details of what such an examination should be for the various grades, it is sufficient to say that it should be such as to render impossible a repetition of such an occurrence as the one of the late war, where a splendid body of men, anxious to gather soldier's laurels for themselves and their State, were rendered not only impotent against the enemy, but an impediment to the activity of their better led comrades by the incapacity and inefficiency, to use no harsher terms, of those to whom they looked for guidance and leadership. Examinations for admission to the ranks, examination for the non-commissioned officers' warrants, examination for a commission and for promotion are essential. And these must not be mere tests of memory, to see how much tactics and regulations the aspirant has memorized. They must be practical, and of such nature and extent as to enable the appointing officer to judge of the fitness of the person

examined to perform properly the duties of the office which he seeks to fill.

It is impossible to specify just what such an examination should be. A Jomini might make a miserable failure as a corporal of the guard, and the writer has known more than one excellent sergeant who, having the misfortune to possess a good memory, and being thus enabled to pass a technical examination, failed utterly to satisfy even himself when under commission. And this being the case the examining board must be constituted by the appointing authority, not of time-servers, not of military automata, but of earnest thinking men who have the interests of the Guard at heart, and know what is needed, and they must not be hampered by petty restrictions, but be given free hand to develop just what the person under examination knows, or is ignorant of. By such means as this, alone, can a proper officering of the National Guard be brought about, and upon such officering depends, more than upon anything else, its efficiency, and until the Guard of each State is made efficient in its State, it is hopeless to look to it for efficiency as a reserve for the Regular army.

To bring about this dual efficiency, neither the lamp of Aladdin nor the purse and cap of Fortunatus being available, it is essential that earnest thinking men should take the matter up in concert. A town-meeting to pass resolutions will not avail, and a congress of militiamen gives room for individual glorifications and an exhibition of oratorical display, but alas! after the mountain has labored painfully, it brings forth a ridiculous mouse!

Action is needed on the part of both National and State legislatures and upon the part of the Executives of the Nation and of each State, and this action must be indicated, explained and urged by those who know thoroughly whereof they speak. And to apportion such duties, and to select the men to perform them, a head is necessary. And the writer believes that such head will most appropriately be found in the head of the proposed Militia Bureau.

The keystones of the bridge over which the National Defense must pass, are, in the writer's opinion, to be found in the erasure from the statute book of our existing laws anent the

militia, and the enactment, as a first step, of the proposed measures for the creation of the militia bureau and the increase, under the restrictions named, of the annual appropriation. This should be the initial point of attack and these measures once carried out, the rest could easily be brought to pass, and the end specified in our title be obtained.

In closing, the writer would say that the length of this essay is so much less than the permissible maxim, that he has feared it might be deemed that he had not considered it worth while to devote more thought to it. This would be a mistake indeed, for he has for many years given the matter most weighty consideration, but he holds with the old writer that "Wisdom lieth not in the multiplication of words." He has indicated along general lines what he deems essential, leaving details to be evolved from the experience and ability of those who may be appointed to pursue the subject further along these lines.

The immortal Bard of Avon makes Henry V., the most kingly king he has portrayed, to say, "By Jove, I am not covetous for gold ; nor care I who doth feed upon my cost ; it yearns me not if men my garments wear ; such outward things dwell not in my desires ; but if it be a sin to covet honor, I am the most offending soul alive." So too says the writer of this essay. And while—such is the vanity of human nature—he would fain have the award which is to be made for the best essay, he would covet far more the honor of having given some ideas which may lead to the accomplishment of the great end concerning which our title makes inquisition.

POST SCRIPTUM.

Since the foregoing was written, the attention of the writer has been called to a bill for raising, organizing, and maintaining the Volunteer army of the United States. This bill, which was introduced by Representative Burleigh, of Maine, on December 15, 1898, was prepared by the Adjutant General of Maine, General John T. Richards, whose devotion to the interests of the National Guard is well known, and was introduced at the last session of Congress. It is H. R. 11,177, 55th Congress, 3d Session, and its provisions, in many instances, give

details of methods, which if adopted, would give vitality to the germs which, in an inanimate form, are found in the foregoing essay.

APPENDIX.

THE MILITIA, REVISED STATUTES, PAGE 285, ET SEQ.

SEC. 1625. Every able-bodied male citizen of the respective States, resident therein, who is of the age of eighteen years, and under the age of forty-five years, shall be enrolled in the militia.

SEC. 1626. It shall be the duty of every captain or commanding officer of a company to enroll every such citizen residing within the bounds of his company, and all those who may, from time to time, arrive at the age of eighteen years, or who, being of the age of eighteen years and under the age of forty-five years, come to reside within his bounds.

SEC. 1627. Each captain or commanding officer shall, without delay, notify every such citizen of his enrollment, by a proper non-commissioned officer of his company, who may prove the notice. And any notice or warning to a citizen enrolled, to attend a company, battalion, or regimental muster, which is according to the laws of the State in which it is given for that purpose, shall be deemed a legal notice of his enrollment.

SEC. 1628. Every citizen shall, after notice of his enrollment, be constantly provided with a good musket or firelock of a bore sufficient for balls of the eighteenth part of a pound, a sufficient bayonet and belt, two spare flints, and a knapsack, a pouch with a box therein to contain not less than twenty-four cartridges, suited to the bore of his musket or firelock, each cartridge to contain a proper quantity of powder and ball; or with a good rifle, knapsack, shot pouch and powder-horn, twenty balls suited to the bore of his rifle, and a quarter of a pound of powder; and shall appear, so armed, accoutred, and provided when called out to exercise, or into service, except that when called out on company days to exercise only, he may appear without a knapsack. And all arms, ammunition, and accoutrements so provided and required shall be held exempted from all suits, distresses, executions, or sales, for debt or for the

payment of taxes. Each commissioned officer shall be armed with a sword or hanger and spontoon.

* * * * *

SEC. 1632. There shall be formed for each battalion at least one company of grenadiers, light infantry or riflemen, and for each division at least one company of artillery and one troop of horse. For each company of artillery there shall be one captain, two lieutenants, four sergeants, four corporals, six gunners, six bombardiers, one drummer, and one fifer. The officers shall be armed with a sword or hanger, a fusee, bayonet and belt, with a cartridge box to contain twelve cartridges; and each private shall furnish himself with all the equipments of a private in the infantry, until proper ordnance and field artillery is provided. For each troop of horse there shall be one captain, two lieutenants, one cornet, four sergeants, four corporals, one saddler, one farrier, and one trumpeter. The commissioned officers shall furnish themselves with good horses of at least fourteen hands and a half high, and shall be armed with a sword and pair of pistols, the holsters to be covered with bearskin caps. Each dragoon shall furnish himself with a serviceable horse, at least fourteen hands and a half high, a good saddle, bridle, mail-pillion, and valise, holsters, and a breast-plate and crupper, a pair of boots and spurs, a pair of pistols, a sabre, and a cartridge-box, to contain twelve cartridges for pistols. Each company of artillery and troop of horse shall be formed of volunteers from the brigade, at the discretion of the Commander-in-chief of the State, not exceeding one company of each to a regiment, nor more in number than one-eleventh part of the infantry, and shall be uniformly clothed in regimentals, to be furnished at their own expense; the color and fashion to be determined by the brigadier commanding the brigade to which they belong.

SEC. 1633. Each battalion and regiment shall be provided with the State and regimental colors by the field officers, and each company with a drum and fife, or bugle-horn, by the commissioned officers of the company, in such manner as the legislature of the respective States may direct.

* * * * *

SEC. 1641. All corps of artillery, cavalry, and infantry,

now existing in any State, which, by any law, custom, or usage thereof, have not been incorporated with the militia, or are not governed by the general regulations thereof, shall be allowed to retain their accustomed privileges, subject, nevertheless, to all other duties required by law in like manner as the other militia.

SEC. 1642. Whenever the United States are invaded, or are in imminent danger of invasion from any foreign nation or Indian tribe, or of rebellion against the authority of the Government of the United States, it shall be lawful for the President to call forth such number of the militia of the State or States, most convenient to the place of danger, or scene of action, as he may deem necessary to repel such invasion, or to suppress such rebellion, and to issue his orders for that purpose to such officers of the militia as he may think proper.

SEC. 1643. When the militia of more than one State is called into actual service of the United States by the President, he shall apportion them among such States according to the representative population.

SEC. 1644. The militia, when called into actual service of the United States for the suppression of rebellion against and resistance to the laws of the United States, shall be subject to the same rules and articles of war as the regular troops of the United States.

* * * * *

SEC. 1658. Courts-martial for the trial of militia shall be composed of militia officers only.

SEC. 1659. All fines assessed under the provisions of law concerning the militia or volunteer corps, when called into the actual service of the United States, shall be certified by the presiding officer of the court-martial, before whom they are assessed, to the marshal of the district in which the delinquent resides, or to one of his deputies, and to the Comptroller of the Treasury, who shall record the certificate in a book to be kept for that purpose. The marshal or his deputy shall forthwith proceed to levy the fines with costs, by distress and sale of goods and chattels of the delinquent, which costs and the manner of proceeding, with respect to the sale of goods distrained, shall be agreeable to the laws of the State in which the same may be in other

cases of distress. And where any non-commissioned officer or private is adjudged to suffer imprisonment, there being no goods or chattels to be found whereof to levy the fines, the marshal of the district or his deputy shall commit such delinquent to jail, during the term for which he is so adjudged to imprisonment, or until the fine is paid, in the same manner as other persons condemned to fine and imprisonment at the suit of the United States may be committed.

SEC. 1660. The marshal shall pay all fines collected by him or his deputy, under the authority of the preceding section, into the Treasury of the United States, within two months after he has received the same, deducting five per centum for his compensation; and in case of failure, it shall be the duty of the Comptroller of the Treasury to give notice to the district attorney of the United States, who shall proceed against the marshal in the district court, by attachment, for the recovery of the same.

SEC. 1661. The annual sum of two hundred thousand dollars is appropriated, to be paid out of any money in the Treasury not otherwise appropriated, for the purpose of providing arms and equipments for the whole body of the militia, either by purchase or manufacture, by and on account of the United States.

Reprints and Translations.

MODERN WEAPONS AND THEIR INFLUENCE ON TACTICS AND ORGANIZATION.

BY CAPTAIN W. H. JAMES, LATE R. E.

(From the Journal of the Royal United Service Institution.)

Wednesday, May 17th, 1899.

General Sir HENRY BRACKENBURY, K.C.B., K.C.S.I., R.A.,
Director-General of Ordnance, in the Chair.

I WILL ask you, in the first place, to allow me to express my great regret that the Commander-in-chief is prevented by a bad cold from being present this afternoon, and at the same time to say, Sir Henry, how much I feel indebted to you for coming forward at such short notice to take his place.

Within the limit of time allowed me this afternoon, it would be impossible to do more than briefly outline the points to be dealt with in my lecture; rather do I hope that what I shall say may form the skeleton to be clothed with flesh and blood by the succeeding discussion.

Napoleon said it was necessary to change a system of tactics every ten years. If this were true at the beginning of the century, when alterations in arms were small and unimportant, ten times more true is it at the present day when the improvements in the weapons employed have been so enormous and far-reaching.

At the beginning of this century practically no progress was made in small-arms beyond slight ameliorations in manufacture, such as the invention of the inverted touch-hole.

The artillery of the Napoleonic era was very little superior to that of Marlborough's, beyond the introduction of shrapnel, originally known as "spherical case," the effect of which, in one instance at any rate, Bull's Battery at Waterloo, was great.

Not much progress was made in the smooth-bore artillery weapon until it was replaced by a rifled gun; both it and the musket remained stationary for fifty years. But in the ten years which elapsed from 1855 to 1865 European nations armed their infantry with muzzle-loading rifled weapons, with one notable exception, that of Prussia, who first adopted the needle-gun in 1841, at a time when the percussion musket was only just replacing the old flint-lock in our army. In the same decade the artillery was also provided with a rifled arm, but no efficient shrapnel was used in any modern European war.

Now we find the latest form of the breech-loading gun, viz., the quick-firer, being introduced in every European artillery, while high explosive common shell either from howitzer or field guns are being rapidly introduced. The hand fire-arm is a small calibre, long-range, flat trajectory, magazine weapon capable of delivering twenty to thirty shots per minute.

The leading of troops on the battle-field becomes every year more difficult. Armies deploy for action at distances undreamt of a hundred years ago. The range of artillery shrapnel enables an efficient fire to be brought to bear on troops up to at least four thousand yards. High explosives are annihilating when they strike, infantry fire is dangerous at two thousand yards and deadly at a thousand yards.

The conditions of war are so altered that it behooves us to inquire whether old methods of handling troops, which still largely obtain, are in any way adequate to the position which has arisen.

The first point to consider is whether the relative advantages and disadvantages of attack and defense have in any way been changed. I think a little consideration will show that this is the case, and that now the tactical defensive is far stronger than it ever was in war. The moral advantages of initiative still, of course, lie largely with the offensive, but a skillfully conducted defensive seems to me to offer opportunities for effects which can scarcely be obtained from a blind offensive. No doubt the man who "goes" for another derives from his vigorous action some advantages. A passive defense can never gain victory any more than a prize-fighter can win the fight by merely warding off the blows of his opponent; but it is not an

uncommon thing for a fencer to allow an adversary to weaken himself by vigorous attack and then to assume the offensive against him when he is tired out by his exertions.

That is the secret of a proper defensive, viz., the power and ability to assume the offensive at the right moment. For instance, Waterloo, where the allies occupied a position affording them fair cover with a view to holding the French. Wellington, meaning to assume the offensive as he did at the end of the day, knowing full well that his Prussian allies, by striking on the French right flank, would be certain to give a decisive victory.

It is a curious fact that two great masters of war—Clausewitz and Moltke—have both taught that the offensive-defensive was the strongest form. Moltke says :

“According to my opinion, owing to the improvement in fire-arms, the tactical defensive has gained a great advantage over the tactical offensive. We were always offensive * * * in 1870 * * * but at what sacrifices ! It appears to me more favorable if the offensive is only assumed after repulsing several attacks of the enemy.”

Wellington is generally looked upon as the great exponent of this system, although two of his most striking victories, Salamanca and Vittoria, were distinctly offensive ; but in others he used the offensive-defensive, and Waterloo is a striking example of its value.

The defensive has had its advocates even in modern times, for instance, when the breech-loading rifle was introduced into the French army Maréchal Niel taught its value, but in the Franco-German War—I speak only of the struggle against the empire—the defense employed by the French was a passive one, and this can never gain a victory.

Superiority is gained on the battle-field by inflicting loss. If fifty per cent. be sufficient to stop an attack, then we commence inflicting this loss over a longer distance, and, as the pace of the soldier is still the same, over a longer time than hitherto.

Moreover, the defensive has the great advantage of cover. A defensive line well covered with a clear foreground is almost unassailable in front under modern conditions. It is no good deducing lessons from the days of Frederick, or even from those

of Napoleon. In both instances troops could get within distances of their enemy which nowadays would mean annihilation, but which they reached with comparatively small loss.

No modern European war even has been fought under conditions which now obtain. To have any idea of what modern rifle fire is capable of we must look to the Chilian War, or even better to our recent operations in the Soudan ; and although we cannot in civilized war expect to find an army attack in the dense formation assumed by the Dervishes, yet even admitting this point, the battle of Omdurman clearly shows what the modern rifle is capable of. Similarly the operations both at this battle and at the Atbara plainly prove the value of the modern shrapnel. I shall deal later with the question of machine guns and high explosives. There can be no doubt that the value of artillery fire has enormously increased, that it is far more accurate and its shrapnel shell a far more efficient man-killing projectile than any which has yet been employed in modern war, and that a similar increase in the value of infantry fire is due to the modern rifle.

Now the probability of a man being hit in the open compared with one in a sheltered trench is at least four to one—some authorities put it much higher. If the man thus sheltered can commence to hit his adversary at one thousand five hundred yards while his artillery fire is efficient up to four thousand yards, it is plain that the assailant's task is vastly harder than of yore. True it is that the latter also employs better weapons, but it is cover which aids the defensive, and this is only available for the offensive at brief intervals, while for a far longer time the troops adopting the latter rôle must in their forward movements be fully exposed to fire. Moreover, the defensive has another great advantage. It can keep its supports close up to its firing line. This the attack cannot do, as they would suffer equally with those in front, and while thus condemned to a passive part, being unable to fire, they would experience losses fully as great as those of the firing line. For be it remembered that the ground in front of an infantry position is covered by fire up to seven hundred or eight hundred yards when the defenders are firing against an assailant at anywhere between four hundred to six hundred yards. Unless, therefore, the ground be extremely fav-

orable it is idle to imagine that troops can be led in support of the firing line for any lengthened period. The experience of 1866 and 1870 will be repeated over again, those in the second line will go on to the first line or go back, but they will not continue to advance under fire without making an effort to get at the foe, and failing ability to do so will fall back.

Skobelev appreciated this after the sanguinary assaults on Plevna, and he has left behind his estimation of what is the only possible way of attacking a position, viz., by successive waves of men. The front goes on till exhausted, a fresh wave must then be sent in to carry it on until its impulsive effort fails, when a fresh one must be sent forward to join the advance. But as we have seen, these advances can only be carried on under fire which will strike them while they are advancing, they must be passively carried on because the firing line in front prevents them returning the fire of the defenders. It is hardly necessary to allude to the moral support derived from firing back. The advances then of the supports must be carried out without return, under fire which it is not too much to describe as devastating, ten times as deadly as troops have ever yet been called on to face. Unless the fire of the defenders is diminished, is less powerful than that of the assailants, how can the latter expect to be able to advance? The defenders have the advantage of cover. They will seek for a straight position with no pronounced salients, and with secure flanks. If fairly well placed they put as many rifles in the front line as their enemy's, while their supports will be close up within ten yards in deep shelter trenches. To attempt to push home an attack against them unless their moral has been shaken is impossible. The only way this can be done is by artillery fire. For it is more probable that the rifle fire of the defense can be concentrated against the attack than that of the latter against the defense.

Why is this? Because the attack in its advance will have more irregular formations, more salients, and re-entrants than the defense, which will seek as far as possible to occupy a straight line position. To his artillery, then, the assailant has to look to gain the superiority before venturing on a frontal attack. But the universal projectile of modern artillery is the shrapnel, and this is practically useless against troops in shelter

trenches. Of course the artillery of the assailant will always have this advantage: that if skillfully handled it is likely to obtain the upper hand over that of the defenders. For the latter must be more disseminated, while the former can, theoretically at any rate, be better concentrated. On this point, however, it must be borne in mind, with the number of guns now employed with the army corps, roughly the same in all countries, viz., one hundred and twenty to twenty-five thousand infantry, that deployed in one line they occupy nearly a mile and a half, *i. e.*, practically the whole front over which the army corps would attack. Greater concentration is therefore only possible in situations in which tiers of fire can be employed. Guns which are capable of high angle fire, such as howitzers, or the weapon which I shall later describe, can of course be used for this purpose, but the flat trajectory quick-firer certainly cannot, unless the ground be remarkably favorable.

But let us consider again how this long line of guns will affect both the defense and attack. You cannot have infantry where the guns are. With regard to the former, positions must therefore be chosen where they can fire over the heads of the infantry, otherwise we must have recourse to the old plan of putting the guns some distance in front of the latter, and withdrawing them when the enemy's infantry gets too close. But this would always be difficult and might be impossible, and if neither of these alternatives is available, then the only other plan is to have the guns on the same level as the infantry, *i. e.*, to double the length of the line of battle. Even then you will have this fact to deal with, viz., that for close action the guns are not so good as the infantry rifles.

With regard to the attack. The field-guns will be deployed along a line almost the same length as that of the attacking force; the infantry advance will probably take place in fractions through the artillery line, thus allowing the unmasked portions to support them. When the first set of infantry fractions have progressed sufficiently far to enable the whole of the guns to reopen fire, the remaining fractions will go forward, masking for a time those portions of the guns which supported the first infantry advance. When the second set of infantry fractions have gained the ground occupied by the first set, the whole line will

be ready to go on once more if sufficient artillery preparation has been attained, the guns firing over them. Against the points of the enemy's line which the general means to capture or break through, the howitzer batteries will now be brought up to supplement the former, with a concentrated high-angle fire, which will often have a decisive effect. I doubt if we shall see many changes of position on the part of the field-guns in the battles of the future :

1. Because of the difficulty of moving such long lines of guns.
2. Because the nearer they get to the enemy, the sooner will they have to cease fire, to prevent hitting their own infantry, and hence it is best to remain in a position whence fire can still be kept up.

Moreover, up to four thousand yards even, their accuracy is very great, and the remaining velocity amply sufficient for proper shrapnel efficiency, and by remaining in this position they will be much better placed to cover a retreat of the infantry, and not have to find new ranges. Do not misunderstand me : I do not say guns will always stop at such a range as this, but I do say that on the whole they are more likely to attain their end by being kept in a position whence they can fire longest with effect. If they accompany the infantry advance, they lose the range and must cease fire, unless on the flank of the attacking force, while under modern infantry fire it will be difficult to get within fifteen hundred yards. I may say that Germany, Austria, and Switzerland have abolished case-shot ; plainly showing that they do not contemplate close ranges for their guns. France has retained them, but given the gunners splinter-proof shields.

If you have followed my arguments, I think you must admit that the success therefore of a purely frontal attack must be, to say the least, problematical. If this be the case, then it is plain that the defensive has gained greatly in comparison with the offensive. I may here call your attention to the fact that the French have abolished the supporting line for an infantry attack, and there is some tendency in Russia to move in the same direction, *i. e.*, to have only one line behind the firing line.

We have, then, the authority of Skobelev and the view of the French to advocate the successive wave system of attack, both the Russian and the French authorities recognizing the

impossibility of the ordinary system of a firing line with support and reserves—in other words, admitting the great difficulty of frontal attack.

What are the other auxiliaries which either side can call in? They are two, namely, machine guns and high-explosive shells. With regard to the former, there can be no doubt whatever that on the defensive machine guns will be of the greatest utility; they enable a concentrated fire to be poured in far greater than from a similar front of infantry, and hence they increase the fire value of that portion of the line. They are, moreover, very mobile, and can therefore be rapidly brought up to strengthen a threatened point, while they afford a very small target to the enemy. On the defensive, it seems probable that, considering their essential nature, to which I have just alluded, machine guns should not be concentrated. On the offensive, however, I am inclined to think they should be used in small batteries. The experience of our troops in Egypt, and that of the Americans in Cuba, shows the feasibility of this practice. Hunter Blair's battery of six *Mæxims* at the Atbara and Parker's battery of Gatlings in front of Santiago both show that this can be done. To leave the machine guns with the battalions on the offensive would be to degrade them to the position of the old battalion gun, which was an incumbrance to the foot soldier, and of no tactical worth from an artillery point of view. The better plan would be to concentrate the four machine guns of the brigade into one small battery. Such a unit would occupy very little space—axle-tree to axle-tree the four only occupy eight yards. On many a battle-field places could be found where such an organization could with safety concentrate its fire over the heads of the advancing infantry on the point selected for attack. Parker did this at Santiago. The argument usually employed against concentration, viz., that it betrays the position of machine guns, only applies to them when firing smoke-giving powder. But the best help for the attack will undoubtedly be derived from the use of high explosives. It has justly been remarked that battles are gained, not by killing men, but by causing the survivors to run away—in other words, by the moral effect of losses. The more sudden and terrifying these losses, the greater their effect.

There can be no doubt that high explosive shells are, from the annihilating effect of their explosion, of this nature. Their physical effect is clearly shown from the results obtained by Elmsley's battery at Omdurman; their effect on men can be deduced from the action of the dynamite guns employed by the Americans in Cuba. These fired a projectile weighing eleven and a half pounds, and which contained three and a half pounds of nitro-gelatine, and had a range of about three thousand yards. Even with such small shells the effect produced seems to have been extraordinarily great. One shell, according to the English Consul, destroyed a house which it struck. Parker, to whose Gatling battery one was attached, says: "We could drop one within twenty yards or so of the place aimed at. It invariably created a commotion, as may be well imagined, and the gunners of the machine guns were keenly alert to restore order among the Spaniards on these occasions." On one occasion a dynamite gun put a Spanish battery, apparently of three five-inch guns, completely out of action. A shell struck fairly under the centre gun, blew it fully twenty feet into the air, disabled the other two, and killed or wounded most of the men in the battery. The moral effect of the guns in the Puerto Rico expedition also seems to have been great. You must not imagine that this weapon is of the Zalinski type. It is really an ordinary gun, the charge being largely air-spaced so as to reduce the pressure and the explosion taking place in a subsidiary chamber. The advantage of this method of construction over the ordinary howitzer is that it gives a much lighter weapon, as the powder pressures are so much less. Since the war it has been largely improved.

A five-inch gun constructed for the United States Government fires a thirty-three pound shell containing eleven pounds of nitro-glycerine, and with a pressure below two thousand pounds per square inch. Groups of three and four shots at from two thousand five hundred to four thousand yards were contained in a circle of three yards radius. The Board charged with the experiments stated that, in their opinion, "no living being could exist within one hundred yards of the bursting shell." This gun on its carriage weighed thirty-one hundred-weight and had hardly any recoil. It is probable that a gun to

fire a twenty-four pound shell with eight pounds of nitro-gelatin might be constructed to weigh not more than thirty-two hundredweight with its carriage, *i. e.*, about the weight of the twelve-pounder horse artillery guns. Our five-inch howitzer fires a shell which weighs fifty pounds and contains ten pounds of lyddite, but it is far heavier—forty-five hundredweight without detachment.

For use in the field such a mobile weapon would have great advantages. Its effect would be enormous, whether against troops in the open or behind earthworks—no cover, whether head cover or otherwise, would be any protection. Houses, villages, woods, would be worse than useless, only earth would afford any protection. I venture to predict that we shall see this gun, or some similar one, largely employed in future war. In the meantime, most armies are introducing high explosives. The French and Germans use them with their quick-firing howitzers. But the United States is the only country which has tried the above described form of gun in the field.

Never forget one point, whatever form of artillery be employed it must cease its fire when the hostile lines of infantry approach within six hundred or seven hundred yards of one another. The backward action of high-explosive shells takes effect over even a deeper space, so that within, what I may call, collision distance the infantry must depend on infantry fire alone, unless it be possible to support them by machine-gun fire. Of course the defensive here again will have the advantage, as it will choose positions which favor the employment of artillery in rear of the infantry. This fact about the machine guns leads us to another important consideration. Should the machine guns be the same calibre as the rifle? For simplicity of ammunition, Yes; but for real utility, No. Simplicity of ammunition, if carried to its extreme limit, would abolish artillery, and may well be disregarded if the introduction of another calibre can be shown to be of great utility. Now, the considerations which limit the size of the rifle, bullet and charge, *viz.*, the capacity of the man to withstand the recoil and the amount of ammunition he can carry, are totally absent in the case of the machine gun. Recoil has no effect and the cartridges are transported by wheel carriage. An increase in the weight of

the bullet giving a higher proportion of weight to diameter, coupled with an increased powder charge to give higher velocity, would produce a much more formidable weapon. A bullet of five hundred grains, with a bore of .350-inch and a muzzle velocity of two thousand eight hundred feet, would provide a gun which would penetrate all ordinary cover and which could hope to deal with guns in the open.

At Santiago, Parker's Gatlings silenced a Spanish battery firing *en barbette* at one thousand five hundred yards. The gun I propose would be formidable at three thousand five hundred yards, and it would be easier to range than the service machine guns because the effect of the projectiles would be more easily seen. Such a weapon would by its increased range be able to keep up fire over the heads of the infantry from a fairly safe distance and aid an attack when the artillery fire had ceased.

I may say here that I have conversed with officers who have used the machine guns on the Indian frontier, in the Soudan, in South Africa, and on the West Coast. In the three last instances there was no doubt expressed as to their value, in the first they seem to have been of little use. The reason is obvious. The enemy did not afford a proper target. The weapon for use there is the high-explosive shell.

Those who have followed me will, I think, agree that more than ever the Napoleonic maxim is true: "Le feu est tout, le reste n'est rien."

Let me, then, briefly review the situation.

Owing to the improvements in weapons the moral advantages of the attack have largely decreased in value when compared with its disadvantages. How far these may be counteracted by the introduction of high explosives cannot be seen till tried in war, but these bid fair to be the predominating factor on either side, for they will destroy the cover of the defensive and any large targets such as massed troops or guns in the open.

Attacks will, of course, be necessary, but these will usually take the form of a holding attack in front, the main efforts being delivered against the flanks. Such out-flanking movements must necessarily be wide, and yet must be fairly sudden if they are to succeed, for otherwise they will only result locally in frontal attacks. Hence, the troops that conduct them must

be mobile. Again, to ward off such attacks, or to assume the offensive from the defensive, mobility is again required, as the troops for the counter-stroke must be kept back out of fire till wanted. Infantry, artillery, cavalry, all alike, must be organized so as to develop this quality in the highest degree. The foot soldier, especially, must carry nothing more than is absolutely necessary. For instance, the thousand men of a battalion each carry a pair of boots. Yet within a fortnight of commencing operations we know that the battalion will not have more than eight hundred men in the ranks. Surely it would be better to carry five or six hundred pairs regimentally. The soldier should have little beyond his canteen, rifle ammunition, haversack, knife, water-bottle, intrenching tool, and some cover for the night and for sleeping. The man will no longer be bound up in the wilderness of straps in which he is at present imprisoned. The Norwegians have recently made a novel departure, which is worth alluding to. They have abolished the great-coat, which gives but poor cover at night, and substituted for it a thick fisherman's jersey weighing two pounds three ounces, and a sleeping bag of three and a quarter pounds weight. The arrangement is considered most satisfactory, and seems worthy of trial.

I have said nothing about the cavalry. In the actual line of battle, with flat trajectory weapons, their chance of success must be small, so long as the enemy's infantry is not demoralized; but the moment that the courage of the defenders fails and they begin to fly, then is the time to let loose the horsemen. But still a great deal may be done by an active cavalry, in the shape of wide turning movements. The British cavalry division, with its mounted infantry, two batteries of artillery, and eight machine guns, seems particularly adapted for such employment. The effect of such movements disturbing the enemy's flank and rear may be very great.

Will cyclist infantry be much employed? I confess to doubting it. They occupy such a great length when marching, coupled with the fact that their machines when the men are dismounted cannot be kept close together, on account of the difficulty that would arise if it were required to mount them quickly. Their true function is in small bodies to support cav-

alry, or for very rapid movements and for reconnoitring. For the latter purpose they have the very great advantage of being noiseless.

Lastly, I would like to say a few words about training. The true foundation of training is a proper system of discipline without which it is impossible to handle troops under modern fire. The next is a proper instruction in the use of their weapons. What was it that made the English archers so celebrated? Their fire, which was accurate because it was a matter of daily practice to them. What was it that made the English infantry so redoubtable at the beginning of this century? Their fire. It is true they had a more powerful weapon than their adversaries, for Brown Bess fired a bullet of fourteen and a half to the pound with six drachms of powder, against the French musket with a ball of seventeen to the pound and a smaller powder charge. But you will find that even in the Peninsula itself a good deal of time was spent on target practice, and, moreover, the two-deep line was superior in fire power to the formation of their adversaries—this superiority of fire it was, not the bayonet, which gave to us the victory. As it was then so must it be now. The men must be taught by constant practice to shoot well.

Another point which must not be neglected is the use of the spade. Cover is not only necessary for the defender. The assailant may have to use it, for in the battles of the future, which may last for more than one day, it will often be difficult to bring up the forces sufficiently early in the day to lead to a decisive attack before nightfall. In such a case the infantry should advance as far as it can without undue loss, and cover itself with shelter-trenches, thus making a defensive position. Behind this, troops should be accumulated in sufficient number, under protection of the night, so that at break of day the enemy's position may be rushed. It may be, however, that the first day of battle would only allow a position being taken up to cover the formation of the artillery line to batter the point or points selected for attack, and in this case the infantry should not be pushed forward until sufficient effect had first been obtained on the next day.

Our organization must also be mobile. Napoleon declared

that what he wanted was "activité, activité, activité," and surely no general more fully carried out this maxim. I think myself the ideal army corps will consist of three divisions, and no corps troops, which had better be distributed for rapidity in marching. Two brigades of five battalions each with seven batteries of artillery, of which two or three should be for high explosives, and the usual engineer and supply organizations, would form a handy force capable of independent action. For difficult country, such as the Indian frontier, no organization should go above a brigade, for the divisional organization is only adapted to long lines of battle.

But no system is of any good unless it fully embodies the spirit of the nation, and our studies are scarcely directed in the proper way to foster it. The people read with avidity, but with unretentive memories, the despatch of the correspondent who records the heroism of some small hill-fight or bloodless battle waged against an ill-armed foeman, but the study of our ancient records, the deeds of the Black Prince, one of the most original tacticians who ever lived; the nearer history of Cromwell, a far-seeing strategist, and most consummate cavalry leader, remain unstudied; while the deeds of Marlborough, the forerunner and inspirer of Napoleon in at least one campaign, are totally neglected and entirely unknown in their influence on military art. Even Wellington, the first appreciator of the predominating factor of war, viz., fire, has never yet received his due meed of praise; and yet the spirit which won Crécy, Poitiers, Blenheim, Oudenarde, Salamanca, Vittoria, is still existing among us, though dormant—I had almost said despaired. Ever and anon as at Delhi, at Kabul, at Isandhlwana, it has shone clearly forth. Men have held their lives as nothing compared with the honor of the flag, and that spirit properly directed, wisely trained and ably led, will as of old know how to lead the invincible legions of the three nations to ever-succeeding victory, because officers and men alike are endowed with that inestimable gift: the inability to appreciate defeat and the deep-seated desire to win a victory.

Colonel W. J. ALT (22d Middlesex R.V.):—It is impossible, Sir, for any speaker in the time allowed for discussion to review the whole of the paper, to the reading of which we have listened with great inter-

est. There is, however, one point upon which I should like to make a few remarks, and that is the question of machine guns. Associated as I have been with the use of machine guns with infantry since the invention of the Nordenfeldt gun, and having, as I may claim, introduced them into the British army, it is particularly gratifying to me to find them alluded to in the manner they have been by Captain James for use in the attack. When I first attached machine guns to my battalion, they were looked askance at by the authorities; later on they were considered to be good for use in defensive positions, but whenever I attempted to use them with advance guards, or with an extended line in attack, my ideas were more or less ridiculed, and I was told that it was out of the question to deal with them in such a manner. Happily their tactical value, both in defense and attack, is now better appreciated. We have no experience in European warfare as to what the effect of machine guns, properly handled, would be.* The lecturer has called our attention to their effective use in the late Spanish-American War, and so far as the working of those guns with infantry at peace manœuvres, over any sort of ground, can guide us as to their use in warfare against European troops, I entirely endorse the lecturer's views as to what might be done with them in the advance. I cannot agree with him as to their being used massed together, because I consider one of the great values of machine guns is the small target which they would offer in whatever way they may be used. If you put three, four, or five together, you form something which the enemy's artillery would pick up much sooner than if they were worked singly, and, in attack, sneaked up on the flanks of a battalion. Another thing I may say is, that with the improvement in the manufacture of steel machine guns, carriages can now be so constructed as to carry a shield which will resist or deflect rifle bullets and shrapnel, and form a perfect shelter for the gun detachments. Machine guns so handled would be a very great moral support to the firing line which they accompanied. So long as the men pushing forward found there was something holding its ground and not being annihilated, they would be encouraged to hold on also and continue the advance. Then comes the question of what sort of mounting and carriage should be used. I have never been in favor—as those who know how I have been working my guns are aware—of using animal traction. You want to diminish the target, and therefore you do not want, and indeed you could not have—at least in the attack—a limber and mules in the first wave or the second wave, or whatever the formation for advance might be; and I adhere to my belief that a lightly constructed handy carriage on two wheels, drawn by hand, containing its own ammunition, and with a trail forming a tripod and consequent rigid platform, whatever the nature of the ground, is preferable to any other

*The use by the French in 1870 of immobile batteries of mitrailleuses, massed in defensive positions, was not a valuable tactical lesson, but no doubt influenced military opinion in questioning the value of a mobile machine gun for all purposes.—W. J. A.

system. The guns might be brought up, if you like, by animal haulage, but as soon as you launch them in the attack you must have guns which can be easily handled by the men, who can pick them up and move forward or retire with them, and which form a very small target indeed. As to calibre, I think that is an open question. No doubt the advantages of having the same ammunition as that used by the infantry are very great, because you can carry a larger quantity and can replenish to some extent from the pouches of men who are placed *hors de combat*, and so pick up some ammunition as you go along. On the other hand, there is a great deal in what the lecturer says, that barrels like I am at present using, viz., the old Martini-Henry, would certainly be much more effective against shelter trenches than the small bore. All I can say is, in conclusion, that so far as my experience goes in handling machine guns for fifteen years, with marching columns, and at peace manoeuvres, working them always by hand in all weathers, by any roads and across any sort of country, I certainly think they will form a most valuable adjunct—not massed together, but used independently with battalions—in future attacks, no matter what enemy you are dealing with. I will not discuss the possibility or impossibility of carrying a position by frontal attack, but the attempt must be made, and the more fire you can bring to bear, either of continuous volley firing or by the fire of one or two machine guns with each battalion—which is practically volley firing—the more chance you will have to creep up and perhaps find an opportunity of rushing in under the cover of the machine guns, after the preliminary weakening of the position by artillery fire has been brought about.

Lieut-Colonel E. GUNTER, *p.s.c.* (late East Lancaster Regiment):—I am sure that the members of this Institution are very much indebted to Captain James for giving so much of his very valuable time in preparing and delivering the lecture which we have heard here to-day. We are always glad to welcome him; he always keeps us up to date. There are one or two points, perhaps, concerning which I, as a student of tactics, may venture to differ a little from him in his method of treatment of the tactics of the present day. I think he lays almost undue stress upon the great advantages of the defensive. It is true that smokeless powder increases the advantage of the defensive, as it enables the defenders to conceal their position; but I think great stress should be laid, which the lecturer has not done, upon the counter-attack. He spoke of cover in purely passive defense. I think so strongly on the subject of the counter attack, which has attracted a great deal of attention lately, that I quite agree with what the well-known Staff College Professor, Colonel Henderson, said the other day at a lecture at Aldershot, that he would abolish the words "offensive" and "defensive" and substitute "attack" and "counter-attack," leaving the word "defensive" to apply to those rare occasions where a passive defense must be taken up, such as where you are awaiting reinforcements, where you

are in very inferior strength, etc. Captain James has not alluded to supporting the attack by a fire from the flank by infantry, not the infantry advancing. I think that if properly conducted the attack still has many advantages. Nothing could exaggerate the great moral effect of the attack. I think all will allow that in a small position the defense has *prima facie* a great advantage; but when you come to an immense position like Gravelotte, it is extremely difficult for a commander to overlook the whole. You cannot get over this fact, which is, of course, repeated in all the text-books and is well known, that the attack has only to make an entry at one point in order to be successful, whereas the defense must be successful all along the line. Captain James has alluded to the French having done away with the supports of the firing line because they cannot fire, but will be exposed to fire. I think, perhaps, the moral effect of a supporting line has been overlooked. That moral effect cannot be ignored. If the troops advancing to the attack have no troops within five hundred and fifty yards of them, they turn their heads over their shoulders with the old cry, "Where are the supports?" The lecturer states that supports following in rear of a firing line will be exposed to the same fire. But General Rohne, who is an authority, and has written a great deal on this question of artillery and infantry fire, states that if the supports are kept at a distance of two hundred and twenty or two hundred and thirty yards behind the firing line they would not suffer. A recent well-known writer on tactics in Germany comes to this conclusion, that it is best during the advance, probably for the moral effect, to keep a line of support; but that when they come into decisive infantry fire distance, about five hundred yards from the position, to let them merge in the firing line. I quite agree as to the desirability of having a lighter gun firing a high explosive, and I think we are very much indebted to Captain James for his most interesting remarks as to the use of the American gun in Cuba. I cannot go through all the questions raised in the paper, as we did not get the synopsis in sufficient time before the lecture to enable us to study it; but as regards one other point, viz., organization, which I agree with Captain James might be improved, I venture to ask whether the present organization of three divisions in the corps would not be improved by having three brigades in the division instead of two. That will give the English division twelve battalions as most foreign divisions have. With regard to the advance to the attack, I also notice Captain James lays great stress upon Skobelev's plan of advancing by successive waves. But were they always successful? Did not that advancing by successive waves lead them to be destroyed in detail, and did they not suffer immensely in the attacks on Plevna? Were they not destroyed one after another? A strong attack, strongly developed from the first with supports, provided they are kept at an adequate distance from the firing line, seems to me likely to win the day.

Major A. W. POLLOCK (late Prince Albert's, Somerset Light Infan-

try):—Captain James has called our attention in the very interesting lecture to which we have listened, to two things. First, the real subject of the lecture, namely, changes in tactics produced by the improvements in modern weapons; and, secondly, he has compared the advantages of the offensive and defensive. He reminded us of Napoleon's opinion that "fire is everything and the rest nothing." I take it that is the key to the whole situation. At the Atbara the British army won because the fire of the attack was superior to the fire of the defense. On the other hand, the Dervishes were beaten at Omdurman because the fire of the defense was superior to the fire of the attack. That superiority of fire can be got in two ways, either by superior weapons or by having superior men behind the weapons. I do not think, when we come to compare the future with the past, that there would be the same disparity between an attacker armed with, for example, the Martini against a defender armed with the Lee-Metford, as there was between the Germans armed with the needle-gun and the French armed with the Chassepot. I believe that the Chassepot was superior to the needle-gun by as much as the Lee Metford is superior to the Martini, and yet, notwithstanding that, the better trained and better led troops won—nearly always on the offensive. Theoretically, with modern weapons, no attack is possible. In theory, the whole ground in front of the defenders' position is so covered by fire that it is impossible for any man to go over it and live. But fortunately—or probably unfortunately, because if attack were impossible war would cease—so far from every bullet having its billet in the ordinary acceptance of the term, the billet of most bullets is mother-earth. As an example, the 38th Brigade at Mars-la-Tour had fired against them, according to Balck, an average of 452 rounds for every Prussian knocked over. I think the total number of rounds fired against the 38th Brigade was 194,000, with the result that one man was hit out of every 452 rounds. That was in the case of an advance chiefly in the open, cover not good anywhere, and in some places none at all. Of course that attack was a failure, partly because it was executed against odds that were absolutely overwhelming, and partly because it was not very well organized. At all events, it came to grief. The difference, to my mind, between the attack of the present day with modern weapons and the attack of long ago lies chiefly in the questions of time and distance; that is to say, the long-range weapon becomes effective at a distance which was unheard of a hundred years ago, and the troops consequently come under fire earlier and are under fire longer. They begin to suffer from the fire at, we will say, 2000 yards, and continue suffering more and more as they go in. One would imagine the result of that to be that the attack would come to a standstill and fail to get to close ranges. So it would, except that we come to the old question, Whose fire is going to be the most effective? As Captain James has reminded us, it is obvious that the defense has advantages in the delivery of its fire which are not enjoyed by the attack. The men are under cover,

they are not fatigued, and consequently they may be expected to shoot better. So long as they remain unshaken and undemoralized by the fire of artillery or of infantry, obviously the attack cannot close with them; but if there is to be a victory won, it is just as clear as ever that the attack must close with the defense and cause the defenders to run away at the sight of their bayonets—or by the feel of them, if they stand. Unless the attack can, in some way or other, close with the defense so as to make the defenders run away, there can be no victory any more than there can be victory on the part of the defense except by a counter-attack, which causes the attackers not only to cease to attack but to run away from before the position which they have assailed. I saw it stated the other day, in a military paper, that because modern weapons are so tremendously effective at long ranges, the battle must culminate at about 1000 yards. In other words, the attackers, when they come within 1000 yards, are to be content to shoot, and to be shot at, until one side or the other resigns the contest. It would not be the slightest use to depend upon an attack of that kind, because it is just as imperative for the attack to close with the defense now as it was in the days of Julius Cæsar. It has got to be done somehow. How to do it is another matter. Colonel Alt reminded us of the fact that both sides at the present day are armed with weapons of equal power, therefore it is merely a question of having more weapons on one side or the other, or having the better men to use them. The battle will be won by the side which, at a distance of 400 or 500 yards, has got the best of the fire fight, whether it be the attack or the defense. If the attack can get so near as 400 yards and there maintain itself, nothing can defeat its assault unless it be a counter-attack, and that counter-attack will have to be made by troops that have not yet suffered appreciably from the fire of the attack.

Major L. C. JACKSON, R. E. :—I did not come here prepared to address this audience, and I should not have ventured to do so, but that I think one practical point has been passed over rather lightly by the lecturer—one which seems to be always passed over with equal lightness by all those who consider the subject of defensive actions. I allude to the actual construction of intrenchments. If I understood Captain James rightly, in giving weight to the chances of a force acting on the defensive, he is assuming that it is to be intrenched. Now, I fully agree that with good trenches the defense will have an excellent chance against the attack, for if the defending infantry can have good protection against the artillery bombardment, it will be in good condition to repel the subsequent infantry attack, and will probably do so. But the question is whether, under existing circumstances, you can extemporize good trenches, and my opinion is that you cannot. People seem to think that if a general decides to intrench a position he has only to give the order and it will be done. But the question is, how long will it take and with what tools is the work to be done? There are good trenches and bad trenches. If you ask infantry to intrench themselves in a given

position, you will find after a couple of hours that they have scratched an irregular hole in the ground about a foot deep and two or three feet wide, and in this they propose to get cover against artillery fire! Any one who has seen practice against such trenches at Okehampton or elsewhere, will know that the cover which is supposed to be gained is a perfect fraud. Again, people talk about the advantage of trenches from certain modern instances, as if those trenches which had been most successful in war were extemporized under the ordinary conditions of the battle-field. Zewin in the Russo-Turkish War is cited as an instance. Now, in that case, the Turks had been in position about a month, and they had excavated trenches four or five feet deep and wide with strong parapets. It was no wonder that the Russian artillery could not drive them out and that they made an excellent resistance. On the other hand, at a battle a little later, in the same part of the world, Aladja Dag, where the Turks had again intrenched themselves, but with less labor, the trenches were of bad profile, and the consequence was that the defenders were hammered out by the Russian artillery before the assault. The attacking infantry had nothing to do. The point I wish to make is simply this, that trenches to be of any use against artillery fire must be of good profile, and such trenches cannot be made in an hour, or even by most battalions in a morning, with light intrenching tools. If you are going to depend upon trenches as an important factor in your defense you must give your men something with which they can dig; you must train them, and you must accustom your officers to lay out the trenches quickly and make all the necessary arrangements for their construction.

Captain JAMES, in reply, said:—There is very little for me to say in reply, because I think practically most of the speakers have agreed with me. Colonel Alt rather objected to my views about massing the machine guns, but at the same time he said he thought they ought to be drawn by man traction as opposed to animal traction. It seems to me if you draw it by man traction that you will put down the target to very small dimensions. I therefore cannot see that the objection to massing the guns because they make such a target will hold good with man traction, and certainly the effect of the massed guns will be greater than with only one. The objection to massing was really aimed at guns with smoke-giving powder. This is no longer used. There is another little point to which Colonel Alt alluded, viz., the fact that if you have the same calibre as the rifle, you will be able to fill up from the men's pouches who have fallen on the field. Yes, but you have to fill the belts also, and that is rather a critical thing to do under fire, and I do not think it would be very actively carried out. My old friend Colonel Gunter said that I had stated nothing about the counter-attack. I must say I think that is rather hard, because I did flatter myself that I had said a good deal about it, and I gave what I thought was rather an apt simile, saying that the prize-fighter who merely wards off blows and does not strike back, will not gain the victory, and that my view was

rather in favor of the fencer who, having exhausted his adversary, proceeds to attack him and beat him. Counter-attack is the essence of the defensive. Again, with regard to the point he brought out about fire from the flank by infantry, that is all very fine, but where are you going to get your flank in a long line of battle? It does not follow that there will be any position from which you can get a flanking fire to bear on the line. For instance, at Atbara the machine guns on the left were able to sweep the intrenchments, but if that line had been ten miles long they would not have been able to do so. Therefore, although you may be able to get this flanking fire against an enemy when you are attacking only a small front, it does not follow that you will be able to do it when you are attacking a long one. Colonel Gunter said that Gravelotte was an example of the weakness of the defensive. There I join issue with him completely. I say that Gravelotte proves that a proper defensive is a very valuable form of fighting a battle. I say that that was shown by the action of the second and third French corps on the left of the line. The losses in these corps were small compared with what they were on the other side of the French line, and they certainly gave the Germans quite sufficient to do during that battle. Now we all know that the action of the seventh and eighth Prussian corps against the second and third corps was practically nothing. They could not get beyond the fringe of the woods which were some distance from the French line. They lost enormous numbers of killed and wounded, and no practical result was obtained by the German attack on the French left. Why was that? Because Frossard, who, my friend Major Jackson will forgive me for saying, was an engineer, had made use of trenches which he was able to throw up, which afforded such efficient cover that the loss in his corps was very small for a fight which lasted such a number of hours.

Lieut.-Colonel GUNTER :—I did not say Gravelotte, I merely said a large position like Gravelotte.

Captain JAMES :—I do not wish to argue with you about the matter; perhaps my hearing was deficient. You must not judge anything by Gravelotte, because Bazaine handled his troops so badly. If he had had his reserves on the right flank, I do not think that the German Guard Corps and the Saxons would have been successful against him, and certainly if he had had them there, there was a very excellent opportunity for a counter-attack. The French Guards could have done something by coming from between Amanvillers—St. Privat against the tired-out Prussian Guards. With regard to the great advantage to be derived from the moral effect of supports, if those supports are non-existent, as I think they would be under modern fire, where is the moral effect? The wave system is the only one which can be employed for frontal attack. I know General Rohne gave a range of two hundred yards beyond which the supports were fairly safe, but do not forget that the French consider the ground up to six or seven hundred meters, in front of this position

will be swept by modern infantry fire. Of course it is quite open to argument whether we should have three brigades in a division. Tripartite organization is, no doubt, a very good one. The only reason I suggested five battalions instead is this, that if we are to have a division consisting of all arms, all the corps troops being split up amongst three divisions, you would, if you had three brigades, get rather a large unit moving on one road. My friend, Colonel Alt, said that I had not assumed that both sides are equal. I stated most emphatically that both sides were supposed to be armed with the same weapons. I know that he is greatly on the side of the offensive, and I remember that he once gave a lecture in this Institution, when I supported him in the views which he put forward. But I think things have changed since then a bit, and that the great improvement which has since taken place undoubtedly puts the advantage on the side of the defensive, because they can use cover, which the attacking side cannot. There is one thing I should like to say on the question as to battles being less sanguinary now than formerly. At the point where actual collision takes place the leading company of the leading battalion is annihilated, and that battalion itself suffers huge losses; but these take place only at the decisive point, and in the other portions of the battle-field the losses are not so great; so that although the absolute loss to the colliding bodies is very great, over the rest of the field the losses are not so large, and therefore the total average is less. There is also another thing to be said. We have actually reliable statistics nowadays, and I very much doubt the statistics of former times; I do not know who got them or how they were got, or anything about them. At Borodino there was said to have been a loss of a quarter of the troops engaged, whereas we know that in the great battles of the Franco-Prussian War, about one-eleventh were placed *hors de combat*. I agree with him in what he said about the old guns. I very much doubt whether any gun can be invented—except, perhaps, the automatic machine gun—which delivers a deadlier fire than the old gun did within grape ranges. Within six hundred yards of the enemy I rather suspect that the fire was as hot as it could be. It would be better if it had been from a quiet fire, but it was very powerful, and the effects obtained from it were very striking. I think there is nothing to say in reply to Major Pollock: he practically agreed with what I have put forward. As to Major Jackson's remarks, I should like to endorse most emphatically the view which he puts forward about the Wallace spade. It is a most excellent thing; it is the sort of thing which is advertised for tourists; it will make an excellent hat-box, and can be turned into a piano-organ, or something of that kind, but for digging purposes I do not think there is much in it. When the Russians passed over the Balkans to go to Constantinople in 1878 they had suffered at Plevna, and they had learned by experience, and they therefore carried the long-handled spade which the foreign farmer uses to dig with. I think that is a great proof that the men appreciated the value

of having a proper intrenching tool with them. It was said that the one thing they would not part with was the spade which they had picked up in the later operations round Plevna. One great reason why the French were beaten at Gravelotte was because the troops on the right were not properly intrenched. Had the Guard Corps been on the right instead of on the left, where it was almost useless, the Germans would not have gained the victory they did. I may tell Major Jackson that I once saw under fire the half-hour shelter trenches very well put up in ten minutes.

The CHAIRMAN (Sir Henry Brackenbury):—I am sure you will all join with me in thanking Captain James for having given us a most extremely interesting lecture. He is one who has given a great deal of thought to the subject on which he has spoken, and I, for one, always feel that I learn whenever I have the pleasure of hearing him. It is about 26 years since I gave a lecture in this Institution, at the request of the Council, on the tactics of the three arms as modified to meet the requirements of the present day. The "present day" is 26 years old now, yet it seemed to me, in listening to the lecture to-day, and the discussion which followed upon it, that I was hearing over again almost exactly that which I said myself 26 years ago, and what was said in the discussion which was raised upon it by the able speakers and thinkers who spoke on that occasion, General Sir Patrick McDougall, Sir Edward Hamley, Sir George Colley, and others, who were great authorities at the time on the subject of tactics, but who have now passed away. After all, we are simply repeating to-day what was said then, that improvements in weapons have made the attack upon a properly defended position more difficult than of old. The same question was raised then as now, as to how that attack was to be carried out; the same question that flank attacks would always be attempted if they could possibly be made, was raised then as now. I think there is the same recognition now, as there was then, of the fact that it is quite impossible to depend solely upon turning the flank of a position, and that we must, come what may, be prepared to force the position held by the enemy in front. Now there is this difference in what took place 26 years ago and what I heard to-day. There are certain terms imported into the discussion to day which were then more or less unknown. The first of these is "machine gun." Machine guns were not unknown then; but they have come since into very much greater prominence. I think that in this country full importance is given by the authorities to the value of machine guns. But it must be remembered that there is always one difficulty in connection with machine guns, and that is ranging them—the fact that we do not see with them as we see with an artillery, where the projectiles fall, and that we cannot get our range with the same ease. I learn that at the battle of Omdurman both Maxim guns and infantry were taking their ranges from the artillery. That is the first time I have ever heard of that being done. Coming to

the next new subject which is mentioned, viz., quick-firing field-guns, Captain James said that almost every nation has now got quick-firing field-guns. I venture to say, if he will pardon me for what appears to be contradicting him, that so far as I know, no nation except one has got a true quick-firing field-gun. They have what are called quick-firing field-guns, but they are not quick-firing field-guns. Russia, Austria, Germany, and other powers like ourselves, have got an improved field carriage which lessens the labor of the gunners and which does increase the rapidity of the fire. But that is far from being a quick-firing gun in the sense that we understand a quick-firing gun as mounted in our fortresses. But, unless I am mistaken, you will shortly hear that quick-firing field-guns will be in the hands of the French troops this autumn and used in the manoeuvres. You will shortly learn that the French have got a real quick-firing field-gun, but at the same time, I think, you will learn that the real quick-firing field-gun has been attained at the expense of reducing the weight of their shells from 15 lbs. to 7 lbs. The French think that this will require changes in tactics. They say they have a gun which is, in all senses, a perfect quick-firing field-gun. The layers of the gun sit down, and the firer of the gun sits down. There are seats provided on the carriage, and they can fire an incredible number of shots in a minute. They claim that these small shells which they propose to fire will require an actual modification in tactics. Whether that will be so or not remains yet to be proved. Whether the effect of quick-firing field-guns or the effect of increasing the rate of fire of our present field-guns—perhaps nearly doubling it, as I hope we shall be able to do—will favor the offensive or the defensive, I should be very sorry to predict, because I think it always comes back to the same old problem. The troops on the defensive, if they have time to prepare their position, have undoubtedly a great advantage in giving their men shelter, but the offensive always has the great advantage that it can select the weak part of the enemy's position, and can concentrate its fire upon that part. It has been said, however long the line of defense may be, however perfect it may apparently be made, if it is broken in any one part, two flanks are at once turned. The third point which is new since the time of which I have been speaking, is the question of high explosives. I am inclined myself to think that the value of high explosives in the field has been somewhat exaggerated. I have seen a great deal of fire of high explosive shells; I have seen a great deal of fire from 9.2-inch guns, and from 6-inch guns, and from 8-inch howitzers, 6-inch and 5-inch howitzers, and even from our 12 pounder guns, and there is no doubt of this, that if with howitzer high-angle fire you can get your shells behind the cover, you can do a work of destruction, or of alarm, which is equal to destruction, that you cannot get from any shrapnel fire when men are protected by works. But from what I have seen of the power of the very small shells, that is to say the 12-pounder or 15-

pounder shells, with high explosives, I believe them to be practically worthless. The Germans use high explosive shells for field-guns, and fire with time fuses. As you probably know, the great difference between the bursting of a shell filled with powder and the bursting of a shell filled with high explosives is that the angle of opening of the high explosive shell is very much greater, that is to say, when a powder shell bursts, pieces go forward in a cone with an angle of about 60° , but when a high explosive shell detonates the pieces are thrown to right and to left and upwards and downwards at an angle of 180° . And the contention of the Germans is that if you burst these shells exactly over the men who are under shelter, the pieces will go straight down upon those men and will kill them. The shrapnel cannot search them out, because they are hidden by the shelter. I can only say that we tried that exhaustively. We put up light screens and burst the projectiles on the screen right over the heads of dummies placed where the men would have been, and we got practically no result at all, although we have got quite as good high explosives and fuses as the Germans. When using shells with time fuses it simply comes to this: How far can you depend upon your time fuses bursting the shell exactly in the right spot? You cannot depend upon it. At 2000 yards range a difference of one-tenth of a second in the burning of a fuse makes a difference of 100 feet in the position of a shell when it bursts. When you use high velocity, high explosive shells with percussion fuses against troops under cover, then you get the same difficulty. As with shrapnel, you have to get through or over the shelter behind which the men are; whereas, if the men are in the open, not behind a shelter, there is no single shadow of doubt in my mind that shrapnel is better than any small high explosive shells ever invented. Then with regard to howitzers, all powers have now got them firing high explosive shells, but only in comparatively small numbers, and those howitzers will be useful for searching out cover which shrapnel cannot search out. There is very little doubt about that, but it must be remembered that these are more or less heavy guns, that they are not mobile in the sense that field artillery is, and I do not think that we shall get that enormous amount of advantage from these high explosives in the field which is generally attached to them. I would like to say one thing more with regard to high explosives. Captain James alluded to the gun which the Americans used in Cuba. That gun is one of the guns with air-spacing and all sorts of complicated arrangements, which the Americans, I suppose, used because they were under the impression that those arrangements were necessary in order to be able to fire high explosive shells with safety. But they are not necessary. We fire our high explosive shells with the ordinary service charges from our 9.2-inch guns and 6-inch guns, and all other guns, and they are just as safe as any other explosive shells. We are going to introduce them into all our fortresses; the navy have introduced them for use in ships,

and they are just as safe as any other shell. You do not want all those complicated arrangements which the Americans had in their guns. The next point I would touch upon is one upon which Captain James spoke, viz., the question of organization. I think he spoke of doing away with the corps troops. It was rather curious to me to hear what Captain James said with regard to the Germans, and it will interest him to know that the Germans have abolished the corps artillery, and are dividing it up among the divisions of the army, with the exception of the howitzer batteries. I am not sure whether those are to be attached to the corps, or to be distributed among the divisions. My own personal opinion is that that is right, and I should personally like to see in our army, with our three-division organization, which I like, those three brigade divisions of artillery which we have with the corps artillery put one to each division of the army. But that theory does not hold favor with the highest authorities in our army, and it will not be done. Then, to conclude, it comes after all to this, that the best men will win, say what you will. You may have the best weapons in the world, and if your men have not the heart to use them, you will be beaten. Where you have equally good weapons it is the heart of the men which will win. That brings us to the great question of the training and discipline of the men. Once, when I was Military Attaché in Paris, I was holding a conversation with Gambetta, and he said to me, "In these days there are only two things which a soldier need know; he must know how to march, and he must know how to shoot." I said, "I beg your pardon, Excellency, there is a third thing, which you have forgotten." "What is that?" said he. And I replied, "He must know how to obey." It is not enough to know how to march, it is not enough to know how to shoot; there must in addition be fire discipline, and that fire-discipline comes of the soldier's knowing how to obey—to obey not merely with a blind obedience, but with an obedience which comes from faith, faith in their officers, faith in their justice, faith in their knowledge, faith in their skill, and faith in their being the soldier's true friend. In that I must say I do not think the British army has any reason to fear that it is behind any other army in the world. Be the tactics what they may, when the day of battle comes, in that respect I think—and I look upon it perhaps as the greatest of all—we need not be afraid. Gentlemen, I ask you to return a very hearty vote of thanks to Captain James for what has been a most interesting lecture.

Comment and Criticism.

OUR MANILA VICTORIES.

IN the January JOURNAL OF THE MILITARY SERVICE INSTITUTION, there is a monograph purporting to give an account of American victories before Manila. As historical misstatements should not pass uncorrected, I beg leave to point out some almost self-evident errors.

Referring to the beginning of hostilities on the 4th of February, 1899, the writer speaks of the fighting at Paco, Pedro, Ana, Macarti, Pandacan, Palampong and Caloocan. To begin with, this new military critic is sadly mixed as to names and localities. Pedro and Macarti are one and the same place,—San Pedro Macarti on the south bank of the Pasig three miles above Manila. "Ana" is no doubt intended for Sant-ana, about half way to San Pedro. There is no place named Palampong near Manila, and there was no fighting at Caloocan (pronounced Calo-o-can), until about twenty days later. In his enumeration of the organizations engaged he omits the Idahos and the 14th Infantry, also Dyer's and Bridgeman's Batteries. He constantly refers to MacArthur as a brigade commander, while he was a major-general commanding a division. He refers to Hughes as a brigade commander, while he had no brigade and was Provost Marshal General in the city. He informs us that Otis and his staff (p. 28) rode about from point to point, imparting confidence to the men and giving instructions for the final attack. It is well known that the G. O. C., presumably the Grand Old Commander, never does go to the front but directs movements from his headquarters in the walled city. Then he tells us, that in the dead of night, February 4th, the saucy *Monadnock* with her saucy eleven-inch guns assisted the Californians, Idahos, and Dakotas. She would have had to fire over Malate and Ermita and into Paco and Pandacan, all occupied by our troops. For this new authority

speaks of our attacking Paco and Pandacan, which were held by us from the first and from which we advanced on the morning of the fifth. He speaks of a nocturnal battle raging around these devoted places, whereas the Filipinos did not open fire on the south of the Pasig until 4 A. M., and our troops did not fire a shot until some time after. He speaks of Aguinaldo, the Filipino Napoleon, directing his masses. He never commands in person and was away at Malolos, ignorant, as he claims, of the impending conflict.

Next we have an account of the storming of Paco, our starting point, and of Dewey's ships opening fire upon it and Mesa (Santa Mesa) far away to the north of the Pasig.

Then we have an account of Lieut.-Colonel Dubose covering himself with glory by capturing Paco where he had been left with two companies in reserve, while the rest of the brigade had advanced and taken Santana and San Pedro Macarti. Some Filipinos who had hidden in a church tower did give some trouble, but they were soon overpowered. Dubose very properly smoked them out by firing the church. He did good service then and on other occasions, but this capture of Paco was like the Dutch taking Holland. He even asserts that the Washingtons and Idahos surrounded the burning Paco church and shot down the rebels as they tried to escape. At that time they were miles away. Then King after the capture of Paco advanced on Mesa. Santa Mesa was far away, over the Pasig on MacArthur's front. But we are informed that MacArthur commanded a brigade on the right. He commanded of course a division on the left. Next we hear of Ygrotes fighting with bows and arrows. They were not brought in until an attempt was made to burn the city. Palampang and Pasai were stormed. There was no fighting at Pasag and there is no Palampang near Manila. At Galingatan we stood furiously on the defensive. I do not know the place, but *furious defensive* is good. "The mobled queen is good." The Utah battery silenced the guns of Paco. What guns, the Astor Battery?

An imaginary battle is described at Loma-Passai, where there was terrific slaughter from naval guns and the enemy were driven towards the Pasig. The capture of Block House 14 was evidently the basis of this romance. But this was an

incident of the battle of Feb. 5th and the insurgents were driven away from the Pasig towards Cavité. Paranaque was taken about five months after. The heaps of rebel dead amounted to sixty-five and there was no indication that any were killed by naval shells. The water works were captured on the 6th by Stotsenberg, not *Sale*.

But the whole article is a tissue of mistakes. I think I have cited enough to show the need of careful revision in an article of this kind. The praise of our soldiers is well deserved. Yet the fulsome laudation of achievements and the omission of any mention of others is certainly unjust. This no doubt was unintentional.

It was, for instance, the good fortune of the Idahos and the Engineer company to carry the most important Filipino positions in the battle of February 5th ; yet this was not referred to in Mr. Craig's article.

But of this,—*Satis superque*.

T. M. A.

Military Notes.

PRIZE ESSAY.

THE attention of the members of the Institution is invited to the essays published in this number of the JOURNAL. By a resolution of the Executive Council it was determined to publish the "Prize" Essay, the "first honorable mention," and the "third in order of merit." A full expression of the views of members on the points embraced is invited; to be published under the head of "Comments and Criticism." It is not necessary that a member should sign his name to the article, although such a course is preferable, but the name of the author must invariably accompany the paper.

VIOLET GLASSES AND SMOKELESS POWDER.

Numerous inquiries having been made on the above subject the Editor of the JOURNAL wrote to Lieut.-Colonel Charles Smart, Deputy Surgeon General U. S. Army, who first discovered the value of certain colored glasses in the detection of the explosion of smokeless powder, and he has furnished the JOURNAL with the following information:

"In July of last year I made some laboratory experiments on the flame of Mauser powder. My object was to find a colored glass which would darken the field of vision without interfering with the brightness of the flash of burning powder. I found that a certain shade of violet permitted the rays from the flame to pass with undiminished intensity while throwing an artificial twilight over the field. Subsequently I sent samples of the colored glass to Mr. Henry Lomb, of the Bausch and Lomb Optical Company, who had them mounted in eye-caps and fitted to a monocular and a binocular Zeiss stereo field glass. These I submitted to the Ordnance Department for the purpose of having them put to a practical test, for the ability to see a flame of some duration in the laboratory did not imply the ability to see a similar flame during its momentary appearance at the muzzle of a rifle. The glasses were tested by a board of officers September 2, 1899, at Springfield Armory, Mass. The powder from a number of Mauser cartridges was burned in open air

in order to see what color was to be expected in the flash from the muzzle of the gun.

"When observed by the naked eye, the flame was of an orange color; when observed through the colored glass eye-pieces on the monocular and binocular, the flame was a bright yellow color.

"The same experiment was repeated with the powder used in the calibre .30 Service Ammunition, viz.: 'Dupont' and 'W. A.'

"The flame from these powders appeared a bright yellow to the naked eye and a lemon yellow with the glasses. When the Mauser rifle and the Service Carbine were fired, however, no flash was visible, even to an observer only a few feet away, either with the naked eye or with the field glasses fitted with colored eye pieces.

"The glasses were then referred to the Ordnance Board, U. S. A., with instructions to test their value in detecting the location of field artillery. Several observations were made during October and November. On one of these occasions seven rounds were fired from a 3-inch field-gun firing Cordite smokeless powder at a distance of 2185 yards. One of these discharges was seen by the naked eye; the seven were seen through the glasses, four without and three with the colored eye-caps attached. The observer could not detect any material difference in the two cases. The board therefore considered that the colored caps did not materially assist in detecting the flash or discharge of field artillery with smokeless powder.

"CH. SMART."

THE SOLDIER'S WIDOW.

While all over this country the "Lawton fund" is growing, and a grateful people, out of their abundance, are glad to add their mite to help save the widow and children of such a man from poverty, the American people should not forget that there are other widows and children, the loved ones of men who like Lawton have given up their lives in the last two years of Cuban and Spanish wars.

They, too, have given long years of devotion to duty, on the plains and distant Indian frontier, deprived of many of the pleasures of life, and their sad deaths in far-off Manila, or near-by Cuba, on battle-field or hospital ship, brought just the same sorrow to the hearts of other devoted wives, who could only gather their children in their arms and pray God for courage to be brave, as the loved one had been, then sadly take up the burden of life and struggle to make some sort of a living for their little families.

It would seem that a grateful country should devise some

plan for educating and keeping from want while so doing the children of these dead heroes whose only heritage is their fathers' unblemished name.

If it is difficult for a general to save any money from his salary, how much more difficult for the junior officers. It costs just as much, relatively, to clothe, warm and feed one man as another, and barring the consideration due to additional rank, just as much is expected from a junior lieutenant as from a general. Appearances must be kept up and each must be ready at all times to do his share in the thousand and one extras and expenses that crop up at all times and places.

The country individually, cannot be expected to contribute to a fund for all widows and orphans, but the people of the country should in their separate capacity provide for them in some way.

Munsey for June, 1899, in an illustrated article entitled "The Cost of a Year of War," gives a slight idea of how death came to some of our brave officers. Gallant Colonel Wykoff, killed at the head of his regiment at San Juan hill; Colonel Haskell, dying from his wounds after reaching home; Capron, Sr., who after seeing his noble son die in Cuba, only lived to reach his home before he, too, joined the immortals; Conrad, who after gallantly leading his regiment all through the Cuban War, succumbed to fever and died on the hospital ship while *en route* home, his body even denied a resting place on his native soil; Egbert, recovering from his wounds in Cuba only to die in the far-off Philippines on the battle-field; Stotsenburg and Krayenbuhl, younger officers, but no less brave, also giving up their lives on the firing line. All these and still others have left families, to whom their death means not only the loss of the loved father and husband, but the loss of home and income as well.

It means to the delicately bred wives of these men that after all sorts of deprivations and hardships on the frontier, they must now in middle age find some way to eke out the little pension which a niggard Government doles out to the widow as a recognition of her husband's lifetime of devotion to duty and death on the battle-field.

General Lawton's death has enabled the people of this coun-

try to realize what has come into the life of one woman. Let them think, also, of those others, the wives of men of as long service, who have sadly and bravely taken up the burden of life and who can look only to Congress as spokesman of the people to alleviate their struggles and stand between them and poverty.—*Army and Navy Journal*.

DUELLING IN THE RUSSIAN ARMY.—EFFECT OF THE CZAR'S ORDER MAKING IT COMPULSORY.

Both the Minister of War, General Kuropotkin, and General Dragomiroff, the most popular and influential commander of the Russian army, who is intrusted with the guardianship of the western frontier of the Muscovite Empire, have just presented to the Czar a very strongly worded petition asking him to abolish the system of compulsory duels among the officers of the Russian army as totally unsuited to Russian conditions of life and Muscovite usages.

Although the late Emperor Alexander was strongly averse to duelling, yet it was he who first inaugurated the present system of single combat among his officers, and that, too, toward the close of his reign. He was led to take this step by the scandalous scene which took place on the parade at Warsaw between two generals, who, having become involved in an altercation, fell upon one another with fists and kicks, the struggle continuing until they were pulled apart and each led away to his quarters very much the worse for wear. Alexander reduced both generals, who were gray-haired veterans, to the ranks, depriving them of all their decorations, and after they had been compelled to serve for two years more as common soldiers, they were discharged from the army with the rank and pension of sergeant.

As this hand-to-hand encounter was merely the climax of scenes of a similar character between Russian officers, Alexander came to the conclusion that the only way of putting an end to public scandals of this kind was to introduce the German, Austrian and Italian system of compulsory duels. That is to say, when two officers become involved in an altercation with one another and use words that can be construed as in any way

insulting, the matter is at once submitted to a court of honor composed of the officers of the regiment to which they belong. The court decides whether the words exchanged have been sufficiently vehement to necessitate a duel, and if the officers concerned decline to fight they are forced to resign their commissions and to quit the army branded with the stigma of cowardice and dishonor.

Now this rule works all very well in Germany, Austria and Italy, where it has the effect of rendering officers exceedingly courteous and considerate in their relations with one another. A man is naturally disposed to put a restraint upon himself, and to observe strictly all social amenities, when he realizes that the slightest neglect thereof, even in intercourse with those of his fellow officers who happen to be his most intimate friends, entails the obligation to fight a duel or to leave the army in disgrace. The duel with its still more unwelcome alternative, follows not in consequence of resentment on the part of one or the other of the two officers, but solely because the military regulations and the code of honor of the army require it, and in these letters I have more than once had occasion to relate how two young officers—bosom friends, who had become involved in a discussion at mess, when slightly heated by wine, but who had forgotten all about the matter on the following morning, and were as devoted to one another as ever, were forced by their fellow officers who had been present at the dispute to either fight or leave the regiment in disgrace.

While sobriety is the rule among the officers of the German, Austrian and Italian armies, it is the exception among the officers of the army of the Czar. Among the latter, hard drinking is universal, and hard drinking leads, as every one knows, to thoughtless and hard words, sometimes even to blows. The result has been that since the ukase of Alexander III., instituting the system of compulsory duels in the army, the number of officers who have been laid low by wounds, or who have been killed outright in single combats of this kind, have been so phenomenally large as to convince the commanding officers that this rule cannot be maintained without impairing the efficiency of the military defenses of Russia.

Both the Minister of War and General Dragomiroff frankly

admit that Russian officers are very hard drinkers, and that they are apt to be rough and discourteous in their bearing, boisterous and neglectful of the amenities of Western social usage when in their cups. But it is ridiculous, they declare, to treat this, so to speak, as a mortal offense entailing the shedding of blood and the loss of life.

Indeed, General Dragomiroff, in a remarkable letter recently published in the military organ entitled, *The Raswedtshik*, does not hesitate to declare that he infinitely prefers to see young officers settling their differences by means of their fists, when the differences are trivial, than fighting full-fledged duels, which are only saved from ridicule by very serious or fatal results.

This is an assertion which, coming from the bravest officer of the Russian army, the only living Grand Cross of the Order of St. George, conferred solely for exceptional feats of valor in the field, will certainly commend itself to the English-speaking people on both sides of the Atlantic as sensible and sportsmanlike.

The General goes on to make a remarkable assertion. He declares that there is no expression in the Russian language that can be regarded as the Muscovite equivalent for the French words for "le point d'honneur." He even goes on to say that there is no Russian equivalent for the word "honor" in the sense that it is understood among officers of the German, Austrian and Italian armies. And the only way of describing a man of honor in Russia is to state that he is a virtuous man. The General ascribes this absence of the word honor in the German and Latin conception of its meaning to the fact that in Russia the system of knighthood and of old-time chivalry never existed. The tourney and the lists where armored knights broke lances with one another for the sake of a lady's glove, or for the least trifling difference of opinion, have had no place in Russian history. They were altogether a Western custom and feature of life. Certainly, he declares, men are to be found in Russia as brave, as honest, and as honorable as in any other country. But the Russian conception of honor, especially of what the Germans describe as "offizierschre" (officers' honor) is entirely different, and he therefore condemns in the strongest

fashion the attempt which has been made to graft an essentially foreign custom and way of thinking upon Russian military life.

GOOD WATER FROM TREES.—WHY WOODSMEN IN SOME PARTS OF THE SOUTH CARRY AN AUGER.

In many sections of the forest lands of the South during the dry seasons a man may walk for miles without finding a stream of water or a spring by which to quench his thirst. If, however, he is an experienced hunter and woodsman, he will not have to drink water from the stagnant pools in order to keep life in his body.

Queer as it may seem, an experienced man can hunt for days through such dry tracts and yet experience no inconvenience on account of the lack of water. Nature has provided a means which is only known to the initiated. Every old huntsman carries with him, when going on a long hunt, a small auger, by which he can secure a refreshing drink and water to cook with at any moment.

A cottonwood tree or a willow is the well which the wily huntsman taps. He examines each tree until he finds one that has what a woodsman calls a "vein." It is simply an attenuated protuberance. By boring into this "vein" a stream of clear water will flow out. It is not sap, but clear, pure water. The huntsmen say that the water is better than the average to be had from ordinary wells. There is no sweetish taste about it, but it has a strong flavor of sulphur, and is slightly carbonated.

The reason for this phenomenon cannot easily be explained, but that a supply of water can be contained in a tree is not so surprising. The fact of its flowing is the wonderful feature, showing that it must be under pressure, or, in other words, that there is more at the source of the supply. When it is considered that the trees furnish the water in the dry season, and that the ground is literally baked, it is the more remarkable, especially when the roots of the trees do not extend to any great depth into the ground.

Owing to the fact that water can be obtained by tapping cottonwood and willow trees, very peculiar testimony was recently heard in a case in the Federal court here. About twenty years ago, at a certain point on the Mississippi River,

one of the islands which was formed by the channel forking and surrounding a large tract of land was deserted by the stream on the Tennessee side. Years afterward this property was claimed by the man who owned property in Tennessee adjoining the former island. His claim was that the island had been washed away, and that the present land was formed by accretion.

The former owner, to prove that the land had not been washed away, sawed off the top of a cottonwood stump that was on the island and showed that it contained fifty-six circles, or rings, beginning at the heart. His statement was that a ring was formed in the tree every year, hence the tree was a sapling fifty-five years ago, and was consequently growing there thirty-six years before the island became a part of Tennessee.

In order to prove that a ring was formed every year he testified that while hunting, about twenty miles from that place in 1865, he had tapped a cottonwood tree for water, and had put a plug in the hole afterward to keep the water from wasting. His theory was that the tree in its growth would have covered up the plug and that the number of rings from this plug to the bark of the tree would be, in the year 1899, thirty-four, showing that a ring had been formed for every one of the thirty-four years it had been imbedded in the wood.

The tree was found and sawed up. The plug was discovered, and was distant from the outside of the tree exactly thirty-four rings.

Although such testimony would not be doubted by a woodsman, it was not received as evidence by the court.—*Memphis Scimitar*.

ALDRESHOT NOTES.

On Friday last a party of wounded men from the Gloucestershire Regiment arrived from Netley at the town station. I may say at once that they were all convalescent, but according to their own version no arrangements appeared to have been made for their reception here. They are now attached as details to the West Yorks Militia battalion, and in all probability they will be sent on to Athlone. One of their number, Bandsman Hodges, who has lost the forefinger of the left hand, and who

has received other wounds, tells me that had it not been for a sum of 4s. given to each of the party by the Lady Superintendent of the hospital they would have had absolutely no means at their disposal. They were wearing all sorts of clothes on arrival, part civilian and part military khaki, in fact anything they could pick up, and they appeared to have had no preparations made for them other than that of the barrack-room. Further I must say that they were allowed too much freedom for men who had just returned from such a climate and under such circumstances. Each man had some nasty wounds, and I cannot help concluding that there must have been some mistake in connection with their arrival, and the subsequent reception of these men. If their version is the correct one, there does appear to be some explanation due. I need scarcely say that each of the party can tell of marvellous escapes and of fearful hardships which they and their brothers in arms have had to endure. One says that the Boer is a splendid fighter until he saw the bayonet and then he funked terribly. Hodges says that he repeatedly saw Boers fall on their knees and beg for mercy when our fellows lunged out with the bayonet. Fools if they didn't. Only fancy! Medals for services in connection with the Canadian campaign in 1866 have been received this week in the year 1900 by Captain Henson, late of the R. H. A., and by Mr. Paske, a late battery sergeant-major, living and respected at Aldershot. This is War Office energy with a vengeance and no mistake. Next, please!—*United Service Gazette*.

PROCEEDINGS OF A GENERAL MEETING OF THE
MILITARY SERVICE INSTITUTION, HELD AT
THE ARMORY OF THE SEVENTH REGIMENT,
N. G. N. Y., DECEMBER 8, 1899.

THE meeting was called to order by Major-General Wesley Merritt, U. S. A., Senior Vice-President, presiding, who remarked :

Guests and members of the Military Service Institution :

Gentlemen :—It is my delightful duty to welcome you here this evening, and preliminary to any address which may be made, I have been requested to read to you a part of the Act which incorporated the Military Service Institution in order that some of the audience may have a better idea of the objects of the Institution, and others who have no idea may have a knowledge of its purposes. I read from an Act of the State of New York for the incorporation of benevolent, charitable, scientific and missionary societies, and the several Acts amendatory thereof, passed May 18, 1883 (Chapter 446).

FIRST.

The name or corporate title by which said society shall be known in law, which we desire to and do hereby form as aforesaid, is "The Military Service Institution of the United States."

SECOND.

"The particular business and objects of said society shall be of a literary, historical and scientific character, and contemplate professional unity and improvement of correspondence, discussion and the reading and publication of essays, the establishment of a military library and museum, and generally the promotion of the military interests of the United States."

THIRD.

"The rooms or headquarters of said society or institution shall be located within the geographical limits of the City and County of New York."

has received other wounds, tells me that had it not been for a sum of 4s. given to each of the party by the Lady Superintendent of the hospital they would have had absolutely no means at their disposal. They were wearing all sorts of clothes on arrival, part civilian and part military khaki, in fact anything they could pick up, and they appeared to have had no preparations made for them other than that of the barrack-room. Further I must say that they were allowed too much freedom for men who had just returned from such a climate and under such circumstances. Each man had some nasty wounds, and I cannot help concluding that there must have been some mistake in connection with their arrival, and the subsequent reception of these men. If their version is the correct one, there does appear to be some explanation due. I need scarcely say that each of the party can tell of marvellous escapes and of fearful hardships which they and their brothers in arms have had to endure. One says that the Boer is a splendid fighter until he saw the bayonet and then he funked terribly. Hodges says that he repeatedly saw Boers fall on their knees and beg for mercy when our fellows lunged out with the bayonet. Fools if they didn't. Only fancy! Medals for services in connection with the Canadian campaign in 1866 have been received this week in the year 1900 by Captain Henson, late of the R. H. A., and by Mr. Paske, a late battery sergeant-major, living and respected at Aldershot. This is War Office energy with a vengeance and no mistake. Next, please!—*United Service Gazette*.

PROCEEDINGS OF A GENERAL MEETING OF THE
MILITARY SERVICE INSTITUTION, HELD AT
THE ARMORY OF THE SEVENTH REGIMENT,
N. G. N. Y., DECEMBER 8, 1899.

THE meeting was called to order by Major-General Wesley Merritt, U. S. A., Senior Vice-President, presiding, who remarked:

Guests and members of the Military Service Institution:
Gentlemen:—It is my delightful duty to welcome you here this evening, and preliminary to any address which may be made, I have been requested to read to you a part of the Act which incorporated the Military Service Institution in order that some of the audience may have a better idea of the objects of the Institution, and others who have no idea may have a knowledge of its purposes. I read from an Act of the State of New York for the incorporation of benevolent, charitable, scientific and missionary societies, and the several Acts amendatory thereof, passed May 18, 1883 (Chapter 446).

FIRST.

The name or corporate title by which said society shall be known in law, which we desire to and do hereby form as aforesaid, is "The Military Service Institution of the United States."

SECOND.

"The particular business and objects of said society shall be of a literary, historical and scientific character, and contemplate professional unity and improvement of correspondence, discussion and the reading and publication of essays, the establishment of a military library and museum, and generally the promotion of the military interests of the United States."

THIRD.

"The rooms or headquarters of said society or institution shall be located within the geographical limits of the City and County of New York."

Then the paper goes on to describe who the directors shall be, and, last of all, the president, vice-presidents and other officers.

The first President of the Institution was Winfield S. Hancock, and the Vice-Presidents, George W. Getty, James B. Fry, Stephen V. Benet, Thomas L. Crittenden, and so on.

We need funds for this purpose, and we are in hopes that this meeting will be the inception of a movement that will tend in that direction. How far we will be able to go and what will be accomplished by this gathering to-night, we do not know. We have invited a number of influential and prominent citizens, whom I see have honored us by being present, and who have all taken a great interest in the welfare of our Institution. We feel satisfied that if the main object of our meeting to-night is thoroughly understood, that there can be no question but that our Institution will be placed on a basis of such permanency and stability that New York City will regard it with pride.

I have said that the orator of the evening, or rather the one selected to begin the addresses—for there are others who will address you—has been designated as the first on the list because he knows more about the Institution than anybody else. After we have listened to them, I feel sure that something will be done which will have the effect of placing the Institution on a most enduring and expansive basis.

I have now the pleasure of introducing Colonel Charles A. Woodruff, Assistant Commissary General of Subsistence.

COL. C. A. WOODRUFF:

"Mr. President, Members of the Military Service Institution and invited guests:

"We meet to-night not to preach war, but to show that the ends sought by this Institution tend towards honorable peace.

"The surgeon does not create the disease that requires the knife, no more does this Institution create strife, but aims to so educate the people as to bring war to a speedy and successful conclusion.

"More than one hundred years ago our first President said: 'There is a rank due the United States among nations which will be withheld, if not absolutely lost, by a reputation for weakness. If we desire to avoid insult, we must be able to

repel it. If we desire peace, one of the most powerful instruments is our rising prosperity. It must be known that we are at all times ready for war.'

"In the concluding chapters of his memoirs, written while his iron will grappled with death, and the lengthening shadows of the tomb were falling around him, General Grant said: 'To maintain peace in future, it is necessary to be prepared for war, * * * and unless we are prepared for it, we may be in danger of a combined movement being made some day to crush us out.'

"A distinguished legal writer said: 'The end of law is peace, the means to that end is war.'

"And I infer from your presence on this occasion that, while you too are advocates of peace, you are likewise not such devotees of sentiment as to close your eyes to the stern facts that confront every nation to-day.

"That readiness for war is productive of peace is shown by the fact that Great Britain's powerful navy is what maintains European peace to-day; her lack of preparation on land caused the Boers to send their ultimatum.

"It was not readiness for war that caused us to engage in the Spanish-American contest; and had we been prepared, there would have been no war, for the potent reason that the ruling power in Cuba would have yielded to the reasonable demand of the United States that the government of that unfortunate island should be based more on the principles of humanity and justice.

"Some people fondly imagine that republics are the especial conservators of peace, and, therefore, we need no preparation for war; history does not confirm this belief, and it is unreasonable to suppose that an individually responsible executive, whether Emperor or President, will be less conservative than a collectively responsible, therefore irresponsible, people and press who may be able to force an elective executive into an unjust contest.

"In the past we have been fortunate; in the words of the President: 'The United States never entered a war except in the interest of liberty and humanity, and never emerged from a contest save with victory and honor.'

"Let us hope we can always say this truthfully, but with our extended and increasing responsibilities, which, however, we may regard the situation, conscience, civilization and patriotism demand that we bravely meet it, to do so will require greater preparation and broader military education among the people; and the mission of this Institution is to aid in preserving and disseminating such education, and to encourage such preparation for war as will enable our Government to call out 'great armies in time of public danger, and to improve and perfect the methods by which such armies are to be rapidly brought into a state of mature strength and effective action,' to the end that the 'rank due the United States among nations' may be maintained.

"The principal object of this meeting is to convince the patriotic, public spirited citizens of New York that our achievements in the past are an earnest of our ability to fulfill this vitally important mission of the future, and that the Military Service Institution is of public benefit and deserving of their cordial, hearty encouragement, and earnest, practical support.

"It was organized twenty-one years ago for the purpose of professional improvement, and an interchange of views upon military matters, especially those calculated to promote the interests of the United States, and to cultivate friendly relations between the Army and its creator, the people, between civilian and soldier, and between Regulars, National Guardsmen and the Volunteers, to the end that we may work together for the preservation of peace; and our constitution makes eligible to membership 'all persons of honorable record and good standing,' and an addition of 124 names in the past few months, mostly from the National Guard and civil life, shows an awakened and wide-spread interest, which we hope will continue.

"We have a military library of 12,000 volumes, which, if properly housed and made accessible to the general public, would be of great value to the military student.

"The Executive Council annually selects some live subject for a prize essay, and generally in response we have received numerous papers that were a credit to the intelligence and industry of our members, but to show that they believe in practice as well as in theory, let me say that, while in 1898, no

essays were submitted for the prize, the names of twenty-one members were entered upon the Nation's Roll of Honored Dead.

"The subject for the prize essay this year is: '*In what way can the National Guard be modified so as to make it an effective reserve to the Regular army in both peace and war.*'"

"And the gentlemen who constitute the Board of Award are: Hon. Theodore Roosevelt, Major-General Thomas H. Ruger, U. S. A., General Joseph W. Plume, of New Jersey.

"For 1900 the subject will be, 'The best Staff Organization for the United States.'

"And a distinguished surgeon and physician of this city has contributed a special prize of \$100 for the best thesis on 'The Ideal Ration for an Army in the Tropics.'

"Our Journal, issued bi-monthly and furnished free to all members, is recognized as one of the best Military service journals in the world.

"Its able articles cover every phase of military literature—the raising, organizing, equipping, and supplying armies in peace and war; the use of troops in riots; the place of female nurses; hygiene and machine guns; cooking and shooting; protection and destruction; with reprints and translations from the best foreign publications; and we expect that its pages will be enriched with the experiences of those who have won the right to write of our wonderful achievements on what were foreign fields, until American valor, endurance and intelligence made them part of the United States—but let me say I am not discussing this question, nor will it be discussed by the JOURNAL, from a political standpoint.

"We have a museum, packed, cased and stored, that is rich with relics of the military history of our country. Indian trophies that speak of endurance, suffering and valor unwritten except in dusty official reports. Shot and shell from an hundred fields, the names of which make Americans hold their heads a little higher. Munitions of war which our forefathers carried at Saratoga and Yorktown. Flags, emblazoned with the names of the thirty battle-fields of the Mexican War, whereon, when the smoke of battle lifted, it found us burying our own and the enemy's dead. Flags that covered our encoffined Arctic martyrs. Flags, whose histories are interwoven

with that of our country from its organization to the present hour. Almost every species of weapon that has ever been raised in defense of American liberty and honor.

'Here is the steed that won the day
By carrying Sheridan into the fight
From Winchester—twenty miles away.'

The whole constituting a most valuable object lesson in patriotic education.

"As soon as we again open our museum we have every reason to expect such grand and diverse contributions from our members in Cuba, Porto Rico and the Philippines, as will testify to the world that your sons are worthy descendants of those who made this Government so big and strong that, in four months, it could, without a single jar in our financial, commercial or industrial circles, destroy two fleets, capture one hundred and fifty thousand prisoners, heal the wounds of a great civil war, and completely change the political map of the world.

"Military knowledge and preparation are national life insurance and the premiums are small compared to the mighty risks; and incidental dividends come in the shape of protection from destructive riots. The magnificent building whose doors are hospitably thrown open for us to-night is alike a tribute to the generosity of the members of this, the most renowned regiment of our National Guard, the first to assume this designation, and the wise contributions of gentlemen who appreciate the value of a reliable force that can be safely used after the mob has tasted blood and fondled plunder—every intelligent man knows these contributions came to the Seventh, not because it was New York's best known regiment, but for the reason that this regiment had shown its value as a life and property saver, in 1834 at the Abolition Riots; in 1849 at the Forrest-Macready riots; in 1861 when it marched away to the defense of the capital; in 1863 when, in twenty-four hours, it was off to help repel the invader, and again when it marched back to crush the Draft riots. These business men, these capitalists who drew their checks did so because they knew it was to provide cheap but reliable protection for their homes, their families and the city's honor.

"Gentlemen: The Government has recognized our Institu-

tion and authorized the free transportation of articles for our library and the museum.

"The Chief of Ordnance writes: 'So far as practicable, under the restrictions of law respecting the distribution of Ordnance property, this office will further the desire of the Executive Council of the Military Service Institution of the United States to keep its Museum abreast of the times in its exhibits'; and we expect a similar kindly assistance from the Chief of Engineers and heads of other Bureaus.

"The Government has given us respectable but cramped quarters for our library on Governor's Island, and until the exigencies of war demanded them, rooms for our museum, but even then our sphere of usefulness was restricted, owing to the time and trouble of getting there.

"What we need is a home for our Journal, our Library and our Museum right here in the city, to which those who are seeking information upon military topics can come, as they go to the Royal United Service Institution of Great Britain, upon which this was modelled, and find any military work extant; maps and statistics of all kinds relating to war. A place where civilian and soldier can meet to listen to lectures and discuss questions relating to military matters, and these questions appertain to the saving as well as to the destruction of life (to-day the army has three surgeons for each Ordnance officer engaged in the manufacture, purchase or distribution of equipments, arms and ammunition); where our educators can bring their classes and in one hour inculcate more American patriotism, teach more history and impart more knowledge of military affairs, ancient and modern arms and equipment, than in months from books alone.

"You have no such place, the Nation has none, there is none in this country.

"If we had had a well-known popular institution of this kind last year, to speak authoritatively, we should have been spared much of the hysterical gush which, but for our magnificent and uninterrupted successes on land and water, would have disgraced us in the eyes of the world.

"The Military Service Institution of the United States, that has upon its rolls the names of all our greatest generals, our

most active National Guardsmen from Maine to California, civilians of acknowledged standing in military historical work, and the brightest young men of the army, has the nucleus for such a building, and we appeal to you and to all others who are interested in a society that stands for Education and National stability to assist us in providing such a home as shall be a credit to this city, an honor to its builders, worthy of its high purposes, a power for patriotic teachings."

THE CHAIRMAN:

After you have listened to the admirable address of the orator of the evening and have understood some of the objects of the Military Service Institution, I am glad to have the opportunity of invoking the remarks and views on the subject by a Veteran and an old member of the Institution, and will therefore call upon General Daniel E. Sickles to make a few remarks.

MAJOR-GENERAL DANIEL E. SICKLES, U. S. A. (RETIRED):

"I am sorry it so happens that whenever you have a meeting I have a long journey to make the same day. On the last occasion on which I had the pleasure to meet with you I had just returned from a tour of duty at the Soldiers' Home in the western part of the State, and the same thing has happened to-day. I therefore find myself somewhat fatigued to-night and not in good form to follow up the oration to which you have listened with so much pleasure. But as we all enjoy light and shadow blended, you will find in my desultory remarks an offset to the brilliant oration just now delivered.

"This is a fortunate moment for the movement which you inaugurate to-night. So far as I am able to appreciate public sentiment, I think that the people of the United States now cherish a broader regard for the Army and Navy of the United States than has existed for a long period. The services rendered by the army and navy in the recent war, if we have yet reached a state of peace, which I somewhat doubt, so far as the Philippines are concerned, have commended themselves strongly to the country. The mistakes which have been made, if indeed there were mistakes, and the criticisms which have been heard, some of which appear to have been well-founded,

have all contributed to impress upon the mass of our people the advantages of military education.

"This city of New York is a most liberal city in regard to everything which looks toward education. The magnificent structure in which we hold our meeting to-night is in itself an object lesson to prove the liberality of our citizens whenever they are called upon to aid a military organization. Our city has built and maintains some of the finest armories in the world. Indeed one can nowhere find armories more costly or better appointed than in the city of New York. We raise and expend yearly enormous sums for educational purposes. I think the estimates for the next year are near twenty million dollars for this purpose. We have recently appropriated a very large sum—Mr. Bigelow can tell you how much—to build a Public Library on the site of the old reservoir. I believe that an appeal can be successfully made to the municipal authorities of the city of New York for a liberal appropriation in aid of the Military Service Institution, from an educational point of view, and I would be glad to join a committee of this body, if deemed advisable, in making such an appeal. I think we would meet with an agreeable response.

"Your present Secretary of War, a resident of our city, is a man of culture and of broad views,—who has himself contributed \$100,000 of his own hard earnings towards a fund in aid of the college from which he was graduated, in the interior of this State. So that you are certain to have the coöperation and support of the head of the War Department, so far as it lies in his power to aid you. If our undertaking is sanctioned by the authorities, and shall be thus brought prominently before the public, I have no doubt that individuals will give us substantial aid. If, after due preparation we begin our task, I feel quite sure of success."

THE CHAIRMAN :

With a view to meeting the exigencies of an engagement that General Greene has, I call upon him, though not in the regular order, to make some remarks upon the Military Service Institution from the standpoint of a Commander in the Philippines.

GENERAL FRANCIS V. GREENE :

"Gentlemen: I have been a member of this Institution and a competitor for its prizes and a constant reader of its Journal from its inception, nearly 20 years ago, yet I have never before attended one of its meetings, nor have I ever seen its museum or any of the books in its library. I mention this because it is equally true of probably 99 per cent. of the members of the Institution. This arises from the fact that very few of its army members are stationed in or near New York. Those in the National Guard are generally so completely occupied with their military duties and business occupations that they find it impossible to go to Governor's Island for the purpose of taking advantage of the benefits of the Institution. I think that this is a peculiarly appropriate time for attempting to spread the usefulness of this Institution. Its object up to the present time has been confined practically to the publication of the JOURNAL. I know of no publication more widely read by the officers of the army, particularly the younger officers, than the JOURNAL OF THE MILITARY SERVICE INSTITUTION. Its papers are all well edited and well written. They are very able, and they stand comparison with those of the Journal of the Royal United Service Institution in London, with which I am familiar. I am astonished to learn of the great extent of the library of the Institution, and as I understand it, it is now proposed to bring this library into the heart of New York City, where it can be made accessible to officers of the army who are stationed here or who are here temporarily either on leave or business, and also to make it available by the proposed new location to the National Guard. I think that, within a radius of 200 miles of this city, the National Guard organizations number nearly 30,000 men and 2000 officers. That is a low estimate of the number of those interested in military affairs who can be benefitted by the Military Service Institution, should the plans be carried out. This is a specially favorable moment for the proposed undertaking for various reasons. In the first place, the enthusiasm engendered by the Spanish War has not altogether subsided, and we are fortunate in having a Secretary of War who appreciates the defects which exist in the organization and administration of the army, and who is determined to trace them

to their origin and to correct them where practicable. It occurs to me that our plan might serve as a basis for the War College which the Secretary speaks of in his report, although I take it that that is outside of the Articles of Incorporation of this Society. On the other hand, I am inclined to think that the Secretary of War would be very glad to have the nucleus of the War College started in this Institution. Another very important feature of his report was that in regard to field manœuvres of the Army and of the National Guard. The great importance of that matter has, I think, been recognized by every military student of this country for a great many years. If these manœuvres can be carried out, it must be somewhere in the vicinity of New York, because the greater part of the National Guard is within a reasonable distance of New York, and Long Island affords the best manœuvring ground that can be got for the purpose. We can therefore rely upon the active coöperation of the War Department and its head in this matter now before us. The only difficulty to contend with is the raising of the money. I don't know what your plans are, or how much money will be needed to start with, but of course we all know that buildings of the kind we would need, in the midst of the city, would be very costly and the expense of their maintenance very great. The clientage of such an institution when it is finally placed where the people can see and have access to it, would be very large. But the generosity of the public spirited wealthy men of New York has never been appealed to in vain in aid of a worthy purpose, and I feel that it is possible to carry out your plans after they have been eventually formulated and properly presented to the public."

THE CHAIRMAN :

I have an idea, gentlemen, that there are as yet no plans formulated—that thus far there is nothing further than the suggestion of ideas which may lead to the formation of something definite. This meeting is, as I understand it, more or less of a feeler, more or less of a conjecture,—one object being to ascertain how much the public have read or know of the objects of the Military Service Institution. I think we have commenced in the right direction.

General Greene reminds me that he is an old member of the

Institution. I recollect very well the time when I was a competitor with him for the prize essay of the Institution, and that he drew the first prize and I the second. He had been abroad and knew more than I did on the subject, and he handled it handsomely.

I have now the pleasure of introducing an old member of the Institution, the Hon. John Bigelow.

HON. JOHN BIGELOW :

"I am taken a little by surprise by your request, although I was invited by your High Priest, General Rodenbough, to come here, as some of you gentlemen wished to consult me about a particular conversation which had passed between myself and General Schofield some years ago in regard to the interests of this Institution. I think it would be very presumptuous in me to add anything to what has been said to-night in regard to the merits of the enterprise which you contemplate, or in regard to its necessity or propriety, or, I may add, its practicability. You will please to consider, if I am to speak upon a subject about which I do not consider myself any authority, that everything which has been said by the gentlemen who have preceded me I wish to have regarded as a part of my remarks. The subject is presented here in a somewhat different aspect from what I had anticipated from the note I received from General Rodenbough, and yet it perhaps is as well that I should refer briefly to that circumstance. It is the only excuse that I can think of for my continuing to occupy your attention to-night.

"Very soon after the will of the late Governor Tilden was probated, and it became known that he had left a large part of his estate to endow a library for the city of New York, General Schofield spoke to me in the interest of this Institute to ask if it would not be practicable for us to give its library a shelter in the city of New York. He felt, of course, the inconvenience which has been frequently referred to to-night in having it located on the Island, and he wanted to know if we could not give it a place here, and perhaps also an appropriation to keep it up, and relieve the soldiers and officers from the burden of its expense. Of course, that was a new question to us, but I said to the General promptly that there would certainly be

every disposition on our part to coöperate in such a movement, with the understanding that the public should have the same privileges with regard to the collections of the Institute as they would have with the other collections of the library. He promptly replied that that was precisely what they wished; that they wished the library made accessible and available to the whole community, and that they did not know of a better use to which it could be put. On one or two occasions since the General has referred to the subject in our interviews, and it has always been necessary for me to say that we are in the hands of the lawyers,—that we were struggling for this library against not exactly princes, potentates or powers, but against things which were very formidable, and that if we ever got into a favorable position, I assured him it would give me pleasure to do all in my power to promote this object. Now, I certainly would be the last one to disregard any idea which you may now have in view. I suppose that what you aspire to and what the army of the nation would require, would be something more comprehensive than anything which could be accomplished by consolidation with the New York Public Library. You want your own rooms and your museum, and so on. Your collections, the moment they become known and attractive, will rapidly multiply. The ends of the earth will be made tributary to you, increasing your needs more and more annually in the way of space and money, and involving a great many arrangements and provisions for which our charter is not adapted. If, however, it should be deemed at any time, even for a temporary period—provisionally—advantageous and satisfactory to give shelter under the roof of the New York Public Library for such a museum as you have, which I suppose does not require a very large space, I would only say, if that is now in the mind of anybody, that I would recommend that the same course should be taken as if you had other purposes in view, and that is, the appointment of a committee, a small working committee of men, who have the leisure and the disposition to attend to the duty in hand and to set forth clearly and intelligibly the objects which you desire to accomplish. The question to consider is whether it is well and wise to aim for the full accomplishment of what you wish at once, or whether it is best to get what is needed by

degrees and grow gradually. This the committee can find out after it gets its fingers on the pulse of that class of the people who take an interest in public institutions. I don't know that I can say anything more that will be of any service or throw any further light upon this subject."

THE CHAIRMAN :

The further we go into this matter the more I am convinced that we are proceeding in the right direction, and I am satisfied that the Military Service Institution will be able, as a result of this meeting, to formulate ideas which will be valuable for the future success of our plans.

I hesitate to do it, yet I feel it would be well to inject a new element into this meeting in the shape of a gentleman who possibly has no knowledge of our objects, and who has not been consulted in regard to our aims, except in so far as his having been tendered an invitation to attend here is concerned.

I take pleasure in calling upon the Hon. Whitelaw Reid to address this meeting.

HON. WHITELAW REID :

"General Merritt and gentlemen : In calling upon me you have certainly accomplished what is always an important, and sometimes a difficult achievement in military matters—an absolute surprise. But I beg you to take notice that the value of such an achievement always lies in the fact that it is the surprise of an enemy ; and I hope the time may never come when any member of this body, or of the great army it represents could look upon me in that light !

"You were quite right in assuming my constant interest in army affairs. My small knowledge of them, however, was gained in the very hard school of an army correspondent, in old-fashioned times, nearly forty years ago. Things are greatly changed. Certainly we were not then provided with a change of horses, a servant and a liberal letter of credit ; with encouragement to draw without limit for expenses. On the other hand, I sometimes think that if our bills were not so big then as those of the men who have succeeded us, at least the battles were somewhat bigger. Recalling personal experiences at Pittsburg Landing and at Gettysburg and contrasting the numbers

engaged and the casualties with the 'bloody battles,' of which within the past year or two we have had a surfeit, from Santiago and Manila to South Africa, I am still more impressed with the idea that the soldiers and the army correspondents of those days were lamentably behind-hand, as compared with those who came after them, whether in the art of fighting battles with the tongue or the pen.

"But from that day to this I have followed closely what the army was doing, and have listened, therefore, with all the more interest to the suggestions that have been made to-night in furtherance of the plans of this organization. When you effected your surprise upon me, however, I was thinking far less of what you propose than of another matter. I had been looking at the inscription on the tablet above your head; and the fact struck me for the first time that the regiment whose hospitality we are enjoying to-night has been in existence for just three fourths of a century. I think I may say—and I am glad to have the opportunity of saying here, and in your presence to-night—that there has been no year and no day during this whole three-fourths of a century in which that regiment has not been an honor to the people and to the city of New York. I have never learned of any occasion when it had an opportunity to serve this city, this State or the Nation, that the 7th Regiment did not render the best service which the circumstances and the real interests of this city and State permitted.

"What has next chiefly interested me this evening has been the opportunity of seeing here on the platform two gentlemen, both of whom you have already heard, whose names are linked historically and forever with the latest extension of the power, and, as I venture to hope, of the increasing glory and more brilliant future of the United States. These gentlemen have both rendered important aid in the enormous expansion of the territory over which our flag floats and in adding seven or eight thousand miles to the journey you must now make in travelling from one of our frontiers to the other. I am sure that in the century to come the names of General Merritt and General Greene will always be held in high honor in connection with this addition to the size of our country, to its wealth, its power and its influence for good.

"Now, Mr. President, I have said far more than I dreamed possible when you called me to my feet. My business is not to make speeches at any rate; but I thank you for this opportunity of expressing the warm appreciation which we all have here, and which I am sure the whole country has now more than ever before, for the Army, and for the Navy as well,—the United services which protect its territory, guard its frontiers, and in the hour of peril everywhere and always sustain its honor."

THE CHAIRMAN :

I feel satisfied that this meeting would be glad to hear from General Butterfield, who came in late, but who is always ready to acquit himself, whether it be by blows or by speech.

GENERAL DANIEL BUTTERFIELD :

"General Merritt : You compliment me completely by calling on me to speak here to-night. I was not here at the opening, so I don't know exactly what the trend of all that has been said may be. I take it, however, as an old member of the Military Service Institution, that the main object of this meeting is to spread the benefits of the Institution and to expand its membership, and its power, for the good of the country.

"The Institution is bestowing great benefit by the publication of valuable information on military matters and the art of war. Whatever can be got to the people on this subject must be of great benefit. We have on the platform, as Mr. Reid has said, two gentlemen who have rendered great service during the late war. One of them has, I consider, sent in the ablest paper that has ever been submitted to this Government. It was signed by General Wesley Merritt and is in the shape of his report on the Philippines. When he was sent there, it was recognized by every soldier of experience that the appointment was a splendid one and would have good results. We have seen what those results were. He performed his duty well and faithfully and when this was over he came away.

"There is no question that the effect of the efforts of the Military Service Institution has produced the best results. Some time ago there was a young man who is sole heir of a magnificent home in this city, and who was popularly known in my own regiment as a 'Dude.' He was appointed a lieutenant in

the Regular army. I was in Washington at the time and telegraphed his mother of the appointment. When I got home he asked my advice and I gave him everything practicable upon the technical discharge of his duties. His ambitions and desires have been taught him while serving in the Militia of the City of New York. Last night at the mess dinner, the Colonel of his regiment read a letter which has been received about this young man in the Philippines. I will read it to show the experience this young man who was considered a dude has had in the art of war. This is the letter with the name omitted:

"It was a delight to find a man so happy as ———, who joined my regiment in Santo Fernando in July and from the start in I called upon him in his little Nipa hut. Clambering up on a ladder to its entrance he was always enjoying the luxurious life of campaigning in the Philippines. What odds to him when, with weary watching after 36 hours on the outposts in the mud and rain, he returned to one night's rest on Filipino couch of bamboo. For once flesh gives way to inequalities of the bamboo laths. The night before the battle of Santo Fernando he was on outpost a mile and a half out, from which I was obliged to call him at midnight to command a company for the fight. In he tramped, always cheerful, then out again, with his company on the trail at 3.30 A. M. for the attack which happened at 5 A. M. In the afternoon I found him messing with his men, as he was separated from his mess, and I had him come to Headquarters mess where he could revel in condensed milk, Ugh! with bacon on the side, and he even liked that. Some people like anything. The National Guardsman finds much of interest on the Island of Luzon, and I was one to see that the lessons he had learned in the 12th Regiment were well learned and well applied.' "

THE CHAIRMAN:

I have been impressed upon more than one occasion when I was present with the fact that it was not the business or proper function of the Toast-master to make very extended remarks, but I cannot resist this opportunity to say for myself and for General Greene, in reference to the remarks of General Butterfield, that if we had known what was to occur in the Philippines after we had left there, we would not have come

away at the time we did. We did not anticipate what was to occur. We thought the war was over. We captured Manila, or hoped we did, and while there may not have been much credit in this because it was ready to fall, still with the noble army we had with us of Volunteers and Regulars, we did our level best and we succeeded to the satisfaction of our friends.

The illustration which General Butterfield has given us of the instruction received by a young man—a "Dude" as he called him—calls to mind that Wellington said that the best soldiers in his army were Dudes. There is no objection I urge to a man who is not as well dressed and as well groomed as some others, but the reputation that attaches to most of that character must go on throughout the world and continue to the end of time. We have all known remarkable instances of the kind spoken of by General Butterfield. I have known men who, after an Indian campaign of months would come from their tents as well groomed as if they were living in a Club in New York, yet they shared all the privations of the field and were good soldiers. The fact that they could take care of themselves was an evidence to my mind that they could take care of men and take care of the exigencies of the service.

I have permitted myself to make more remarks on this subject than I had intended. I now feel like hearing from the National Guard and have pleasure in calling on General Plume of New Jersey.

GENERAL JOSEPH W. PLUME:

"Mr. Chairman and Gentlemen: This is a surprise. I had no idea I would be called upon for a speech this evening, neither did I know the object of the meeting. This is the first meeting of the Military Service Institution I have attended, although I have always taken its magazine and read it with profit and pleasure. As a National Guardsman of over forty years' experience—from a private to a Major-General, also as a Brigadier-General in the Spanish-American War—I will say that the JOURNAL of the Military Service Institution supplies the very thing lacking in the training of the National Guard.

"We think the National Guard is pretty good. Major-General Butler (who commanded a division composed entirely of National Guard) said to the President of the United States, in

my presence, that he had as fine a division as there was in the army; and speaking of the brigade which I had the honor to command, he said, 'Plume commands a brigade which any Regular officer would be proud to command.'

"The plan suggested here to-night is a good one and should succeed, and I will be very glad to do everything in my power to help it along. The National Guard of my own State (and I presume it is the same in every other State) receives the JOURNAL with pleasure and reads it with great interest, and we hope this movement will succeed."

THE CHAIRMAN :

I have the pleasure of introducing Colonel Church, of another journal. He has done a great deal of good for the army and is willing to do it more.

COLONEL W. C. CHURCH, of the *Army and Navy Journal* :

"Gentlemen : This is certainly an impromptu affair. I cannot refrain, however, from expressing my most cordial approval of all that has been said about enlarging the sphere of the Military Service Institution, and my entire willingness to do whatever I can do to carry out the plan which has been suggested. I have read the periodical of the Institution a great deal. I receive periodicals from every quarter of the world, even some in the Russian language, although I don't pretend to read that with great fluency, but I know of no periodical that equals in character the JOURNAL of the Military Service Institution.

"I want to say that our soldiers who survived the Civil War have had a larger experience than any other soldiers in the world. In the last 50 years the English had not met civilized foes, until they met the Boers in the present war in the Transvaal, if indeed we can call them 'civilized' in the sense in which the word is intended. I am surprised as to the evidence which other periodicals give of this fact, that our soldiers have a larger practical knowledge of war than any others. We have been so accustomed to criticism in this country that I don't think we can do full justice to the American soldier. We always show the best results, and the people take that as a matter of course, but the organizations which produce these results are subjected to constant criticism. Look at the short experience of the Eng-

lish in South Africa as compared with our largely criticised campaign in the Philippines. It is not what you do that is criticised here, but what is still uncompleted. I was much struck on reading General Otis's report of the evidence it gives of the correctness of the plan undertaken in the campaign in the Philippines. General Otis has been criticised for not doing certain things which, in accordance with the approved plan, he has purposely sought to avoid. What General Otis has accomplished under these difficult circumstances is remarkable, and I believe the future historian will give him credit for the magnificent services he has done to the country.

"The only criticism which I have to offer to the Military Service Institution as to its gathering military information for the benefit of the soldier and the public is that it is not sufficiently in evidence. We do not know how extensive the Institution has become. I had no idea, for instance, that your library contained 12,000 volumes, and you will certainly accomplish a great public work if you will bring it to public notice. This Institution should be a public University—a centre of military knowledge. The trouble with us is that the knowledge of military matters is not sufficiently diffused. I should be glad to see the idea suggested in the Secretary of War's report carried out. To carry out Washington's idea we should create a National University, and train men for the public service, for the army and for the navy, and for the diplomatic service. That is the idea of to-day. The trouble in this country is that the masses are ignorant as to the details of most public matters, especially as to military affairs, and the more you educate them by such means as the JOURNAL the better they will be able to understand and to criticise. What we want is to banish the idea that the soldier is not as necessary as the doctor or the lawyer. The people seem to have an idea that if we can get rid of the soldier we can get rid of war, and that is the idea we have to combat. I am heartily in favor of putting the Military Service Institution in a position where it can still further benefit the country."

THE CHAIRMAN :

There is no question in my mind, from my experience in the late war, that if our National Guard and soldiers generally who recruited companies had fair opportunities of learning their

duties, that they would do so ably and quickly. But these opportunities are not yet well provided for. When I reached San Francisco, as General Greene will bear witness, as he was with me, we found the National Guard and the volunteer army only too anxious to learn, but we had not the means to teach them. I detailed officers of my staff and they taught the men to make out their reports, their ration returns, their clothing papers and matters of that and other kinds, such as guard mounting, etc. I can say for the volunteers on that occasion that there were no men more anxious to be taught their duties than they, but there were too few teachers. That is one of the objects of the Military Service Institution. We want to increase the number of teachers and bring them in contact with the untaught soldier, so that when war comes we shall not have a lot of raw men to instruct. I don't know of any one more able to talk upon this subject than General Roe, Major-General Commanding the National Guard of the State of New York.

GENERAL CHARLES F. ROE :

"Mr. President and Gentlemen : I understood that the principal object of this meeting was to bring the National Guard and the Army in closer touch. It seems to me that many of the gentlemen who have preceded me have wandered far afield, and it is well if we get at some practicable way of getting at the desired end. I am sure that the National Guard of this State, whose feelings I understand pretty thoroughly, is entirely in sympathy with the Army of the United States. I wish to cite one single instance. When the original Hull bill was presented in Congress it was opposed by the National Guard of some of our States. It was not opposed by the National Guard of this State in any way, and in order that there might be no misunderstanding about our position I took pains to write the Military Committee of the House stating that the National Guard of New York was in sympathy with the movement to make the army 100,000 strong, and that we did not see that that would interfere in any way with the prerogatives of the National Guard.

"Now, how can we bring the National Guard and the Army in touch with each other? This meeting to-night has suggested

an idea to me which might lead to such a result. Let all the future meetings of the Military Service Institution be held in the city of New York, and if it can be brought about, let them be held in one of our armories. I think there would be no difficulty in getting a room in an armory, and that would be making a start in the direction of bringing more National Guardsmen in contact with the Association and not compel them to go to Governor's Island.

"I do not expect to say much to-night on the subject of the National Guard as a part of the army, except to say, first and foremost, that the National Guard, so-called, is a State force, to be used for State purposes, and when it becomes necessary to call upon it by the United States in times of great emergency it can be done under the statutes for a period not to exceed nine months. But they should be *ordered* for this purpose and not asked to volunteer. The National Guard would be used to protect the United States until volunteers could be called for and organized and individual men and officers of the Guard should be allowed to enter the Volunteer service. After this the National Guard should be sent back to its own State, where it belongs."

THE CHAIRMAN:

Although the evening is no longer young, we have yet some time. We would be glad to hear from the Superintendent of the United States Military Academy at West Point, Colonel Mills.

COLONEL ALBERT A. MILLS:

"I can only add my own testimony to that already given regarding the value of the Military Service Institution to the country at large and the work it has been doing. For many years its excellent JOURNAL has disseminated to military readers throughout the land valuable military information that could have been given in no other way. I know in the army it has encouraged study and research and the practical character of many of its articles had not a little to do in the making of the very efficient Regular troops we sent to Cuba and the Philippines. The Institution is worthy of continued support and we should be glad to take any steps we can to increase

its usefulness. It seems to me, with the aid of the distinguished and influential people at this meeting to-night, it should not be a difficult matter to secure from the Legislature of New York an appropriation that would give the Military Service Institution a home in New York City which would make its valuable military library and its interesting museum accessible to the many people interested in military matters."

THE CHAIRMAN :

This is almost too interesting an occasion to close, but as I have already said, the evening is no longer young, and you have stood by us faithfully. I have consulted with the High Priest of the Institution and he tells me that this is about the time for us to adjourn for refreshments. I therefore declare the meeting adjourned *sine die*.

Announcements.


Essays

In competition for

The Prize of 1900

Have been received from writers with the following
nommes-de-plume :

Walden-Highbridge.
Matchlock Matross.
Bradford.
Pro Patria.
Droit et Avant.
Boutez en Avant.
Security.
X. Y. Z.
Scout Jack.
One who served with
the Volunteers.
Eagle.

Duquesne.
Cincinnatus.
Innominato.
Civitas.
One Way.

Peribo.
Se vis pacem para
bellum.
Colonel of the Line.

Annual Report.

The Military Service Institution of the U. S.
Governor's Island, N. Y.

JANUARY 1, 1900.

To the Members of the Military Service Institution of the United States.

GENTLEMEN :—I have the honor, on behalf of the Executive Council, to submit the following report of the operations of the Institution during the past year.

The accounts of the Treasurer, after careful audit by the Finance Committee, show the business affairs of the Institution to be in a prosperous condition, while the accession of new members is constant.

A wide-spread interest in the Institution is made apparent by the great number of applications from foreign military publications for exchange with our Journal. Our exchanges embrace publications in England, France, Germany, Austria-Hungary, Italy, India, Buenos Ayres, Brazil and Mexico.

On account of the war with Spain—our officers not having the opportunity of writing while engaged in the field—there were no contestants for the prize of 1898, on the subject of "Our Water Boundaries and our Interior Water-ways," but I am pleased to announce that we have twenty competitors for the prize of 1899, on the subject of "In what way can the National Guard be modified so as to make it an effective reserve for the Regular army in both War and Peace?"

On the 10th of February, 1899, the Institution celebrated

its twentieth anniversary, by meeting at the Waldorf-Astoria, by which many members were brought together. These meetings are certainly productive of good results.

A general meeting of the Institution was also held December 8, 1899, at the Seventh Regiment N. G. N. Y. Armory, which place was generously tendered for the purpose by Colonel Daniel Appleton, of that regiment. The occasion was one of much interest, it being intended as a move in the direction of providing a permanent home for the Institution, with museum, offices, library, etc. This has been followed by the appointment of committees to prepare the way and to adopt such measures as shall seem most suitable for the purpose. It is therefore hoped that, ere another year shall roll around, something of a tangible nature will be developed.

NELSON A. MILES,

Major General, U. S. Army.

President.

Resolutions

OF THE EXECUTIVE COUNCIL M. S. I., ON THE DEATH OF

Lieut.-Colonel W. H. H. Benyaurd,

CORPS OF ENGINEERS, U. S. A.

Extracts from the minutes of a meeting of the Executive Council of the Military Service Institution, held at Governor's Island, N. Y., February 9, 1900.

Bvt. Brig. Gen. T. F. Rodenbough, V. P., in the Chair.

* * *

General Clous then announced the death of Col. W. H. H. BENYAURD, a member of the Council, and moved that a Committee of Three be appointed to draft suitable resolutions, and that the same be published in the forthcoming number of the JOURNAL. The motion was unanimously adopted, and Generals Gillespie and Clous and Major Butler were appointed the Committee.

* * *

At a meeting of this Committee, the following preamble and resolution was adopted :

WHEREAS, We have heard with deep regret of the death of Lieut. Colonel W. H. H. BENYAURD, Corps of Engineers, U. S. A., which occurred in the City of New York on Wednesday, February 7, 1900, therefore be it

Resolved, That the Executive Council of the Military Service Institution, of which Lieut. Colonel BENYAURD was a member, hereby expresses its sorrow at the loss of one who was so much honored in his military life, and whose generous character, winning manners, and dignified deportment gathered around him the best and brightest minds of his environment, and made lasting attachments and friendships valuable to himself and the service.

By the death of Lieut. Colonel BENYAURD the service loses a loyal, brave and active officer, and the Military Service Institution a member earnestly devoted to its interests.

G. S. GILLESPIE,
Col. Corps of Engineers.

J. W. CLOUS,
Lt.-Col. Deputy J. A. Genl.

JOHN G. BUTLER,
Major of Ordnance.

Obituary.

Lieut. Colonel W. H. B. Benyaard,

CORPS OF ENGINEERS, U. S. A.

Lieut. Colonel Benyaard died in the City of New York on Wednesday, February 7, 1900, after a brief illness from pneumonia. Lieut. Colonel Benyaard was born in Philadelphia, Pa., May 17, 1841. He was appointed to the U. S. Military Academy July 1, 1859; and was graduated No. 6 in a class of 25 members July 11, 1863; was promoted First Lieut. Corps of Engineers July 11, 1863, and immediately assigned to duty for the construction of the defenses of Pittsburg, Pa.; but in August was transferred to duty in the field with the Engineer Battalion, and as assistant to the Chief Engineer, Army of the Potomac.

He remained continuously in the field until the close of the Civil War, being present at the surrender of Lee's Army at Appomatox C. H., April 9, 1865, as Chief Engineer of the 5th Corps. His war record shows that he accompanied General Kilpatrick on the raid to Richmond to relieve Northern prisoners, March, 1864; took part in the construction of the famous Pontoon Bridge across the James River in the campaign against Petersburg, June 15, 1864; and served as an Engineer officer in all the operations of that campaign, holding the position of Chief Engineer of the 5th Corps, on the staff of Major General Warren, at Five Forks, April 1, 1865. He was brevetted Captain August 1st, 1864, "For gallant and meritorious services during the campaign against Richmond, Va.," and brevetted Major April 1, 1865, "For gallant and meritorious services at the battle of Five Forks, Va." For his conduct at Five Forks he was awarded a Medal of Honor on the following record:

"Lieut. Colonel W. H. B. Benyaard, Corps of Engineers: For most distinguished gallantry in action at Five Forks, Va., April 1, 1865. Major General Warren, commanding 5th Army Corps, seeing his troops wavering, seized his headquarters flag, rode to the front accompanied by Lieut. Benyaard, Corps of Engineers, and calling on his men to follow, the troops resumed the advance and were successful. Also, in the same action, Lieut. Benyaard, with one companion, voluntarily advanced beyond the skirmishers, where he was exposed to imminent peril. In this reconnaissance seven prisoners were captured; while serving as First Lieutenant Corps of Engineers."

He was promoted to the grade of Captain May 1, 1866; to Major March 4, 1879; and to Lieut. Colonel July 2, 1889.

From the close of the Civil War until the outbreak of the Spanish

War, Lieut. Colonel Benyaard had charge of many important works connected with the Corps of Engineers, and during the Spanish War superintended the construction of the defenses at St. Augustine, Key West, and Tampa, which he executed with promptness and good judgment. In June, 1899, he was transferred north and charged with civil improvements in the vicinity of New York City.

Captain E. D. Smith.

NINETEENTH U. S. INFANTRY.

On Feb. 7, 1900, the Adjutant General received a cable message from General Otis that Captain E. D. Smith, of the Nineteenth Infantry, died at Sogod, on February 5, from a gunshot wound, and that the body in a sealed casket will be shipped to San Francisco.

Captain E. D. Smith was born in Connecticut. He was graduated from the Military Academy in June, 1879, and was appointed Second Lieutenant of the Nineteenth Infantry. He became first lieutenant of that regiment in December, 1889, and captain in January, 1895. He participated with his regiment in the Spanish-American War, and at its close served as Collector of Customs at Ponce, Puerto Rico, until last summer, when he accompanied his regiment to the Philippines.

Captain Bogardus Eldridge,

FOURTEENTH U. S. INFANTRY.

Captain Eldridge was wounded in action on the Imus-Bacoor road at 5.30 o'clock P. M. on the 2d day of October, 1899, and died shortly after.

He was appointed from Massachusetts, Second Lieutenant Tenth Infantry, August 21, 1876; First Lieutenant May 21, 1883, and Captain 14th Infantry, September 7, 1897.

On the morning of October 2, 1899, the insurgents had entrenched themselves on the outer and longer side of the big bend of the Imus River, between Bacoor and Imus, commanding the road and preventing communication between the two towns.

Shortly after 1 o'clock P. M., Captain Eldridge, who had come with his company (Co. H, 14th Infantry) from Zapote to Bacoor as reserve, and had later deployed his company as skirmishers on the left of Company E, 14th Infantry, and facing the river, was ordered to move by the left flank, extend around the bend and connect with the 4th Infantry.

He took the lead, and exposing himself to a severe flank fire from

an enemy scarcely 75 yards distant, he brought his company into position and then returned to the big bend where the fire was hottest.

About 5.30 o'clock P. M., after the enemy had been silenced and while standing with a group of officers receiving orders, one single shot was fired from across the river and Captain Eldridge received his death wound.

Major Clem R. Schaer,

1ST ARKANSAS VOLUNTEERS.

Major Schaer, while out hunting, a few miles from Little Rock, Ark., met almost instant death November 11, 1899, by the accidental discharge of his shot-gun. He and a companion were climbing over a barbed-wire fence, and while the companion's back was turned he heard the discharge of a gun, and on looking around saw the major lying on the ground. The entire load of shot had entered the right side of his head. Major Schaer has been a member of the organized militia of Arkansas since 1874, was Brigadier General of the Arkansas National Guard when the call was made for troops in the Spanish War, and tendering his service was commissioned Major of the First Arkansas Volunteers. He leaves a wife but no children.

Acknowledgments.

Military.

Armée et Marine; regular issues for January and February, 1900; Paris.
Army and Navy Gazette; regular issues for January and February, 1900; London.

Army and Navy Journal; regular issues for January and February, 1900; New York.

Army and Navy Register; regular issues for January and February, 1900; Washington.

Catalogue of Ordnance Museum, U. S. Military Academy; by Captain John T. Thompson, Ordnance Dept., U. S. A., 1898; West Point, N. Y.

El Boletín Militar; regular issues for January and February, 1900; City of Mexico.

International Revue über die Gesammten Armeen und Flotten for December, 1899, and January, 1900; Dresden.

Journal of the United Service of India for November, 1899; Simla, India.

Journal of the Royal United Service Institution for December, 1899; London.

Journal of the U. S. Artillery for January and February, 1900; Fort Monroe, Va.

La Belgique Militaire; regular issues for January and February, 1900; Brussels.

La Revue Technique; regular issues for January and February, 1900; Paris.

Proceedings of the Society of the Army of the Potomac, 1899, at Pittsburg, Pa.

Proceedings of the Royal Artillery Institution for November and December, 1899; Woolwich, England.

Revue d'Artillerie for December, 1899; Paris.

Revue de L'Armée Belge for September and October, 1899; Liege.

Revue Militaire de L'Etranger for December, 1899, and January, 1900; Paris.

Revue du Cercle Militaire; regular issues for January and February, 1900; Paris.

Revue d'Artillerie for December, 1899, and January, 1900; Paris.

Revista di Artiglieria e Genio for December, 1899; Rome, Italy.

Revista Militar for December, 1899; Rio de Janeiro, Brazil.

Seventh Regiment Gazette for January and February, 1900; New York.

United Service Gazette; regular issues for January and February, 1900; London.

United Service Magazine for January and February, 1900; London.

Naval.

Boletín del Centro Naval for October and November, 1899; Buenos Ayres.

Marine Review; regular issues for January and February, 1900; Cleveland, O.

Nautical Gazette for January and February, 1900; New York.

Navy and Army Illustrated; regular issues for December, 1899, and January and February, 1900; London.

Proceedings of the U. S. Naval Institute for December, 1899; Annapolis.

Report of the Superintendent U. S. Naval Observatory, 1899; Washington.

Revista Maritima Brasileira for December, 1899; Rio de Janeiro.

Miscellaneous.

Appleton's Popular Science Monthly for January and February, 1900; New York.

American Journal of Mathematics for January, 1900; The Johns Hopkins Press; Baltimore.

American Monthly Review of Reviews for January and February, 1900; New York.

Bulletin of the American Geographical Society, No. 5; New York.

Book Reviews for February, 1900; New York (Macmillan & Co).

Courier de France et d'Amerique for December, 1899; Paris.

Current Literature for January and February, 1900; New York.

Commissioner of Patents, Annual Report of; 1898; Washington.

Cosmopolitan for January and February, 1900; New York.

The Century Magazine for January and February, 1900; New York.

Early Development of the Chesapeake and Ohio Canal Project; The Johns Hopkins Press; Baltimore.

International Monthly for February, 1900; Macmillan Co., New York.

Journal of the Western Society of Engineers for November and December, 1899; Chicago.

La Revue Canadienne for January, 1900; Montreal.

Monthly Weather Review for November, 1899; Washington, D. C.

Medical Record; regular issues for January and February, 1900; New York.

The North American Review for February, 1900; New York.

Official Gazette of the U. S. Patent Office; regular issues for January and February, 1900; New York.

Proceedings of the American Society of Engineers for January, 1900; New York.

Political Science Quarterly for February, 1900; Ginn & Co., Boston.

Public Educational Work in Baltimore, by Herbert B. Adams, December, 1899 (Johns Hopkins University Studies); Baltimore.

Report on the Kite Observations of 1898; Bulletin F, Weather Bureau; Washington.

Rutherford B. Hayes (in memoriam); ex-President of the United States and Brevet Major General U. S. Vols.; 1899; Commandery-in-chief M. O. L. L.; Philadelphia.

Scientific American; regular issues for January and February, 1900; Munn & Co., New York.

St. Nicholas for January and February, 1900; The Century Co., New York.

Studies in State Taxation (Johns Hopkins University Studies); Baltimore.

Theses

In competition for

Doctor Seaman's Prize

Have, up to the time of going to press, been received
from writers with the following *nommes-de-plume* :

G. K. S.

Ulmus.

Cuba Libre.

Variety is the Spice of
Life.

Dum vivimus Viva-
mus.

Just a Regular.

All Officers ❁ ❁
On Foreign Stations

Will please notify the Secretary of the
Military Service Institution

The Address ❁

to which they desire the JOURNAL
to be delivered. ❁ ❁ ❁

The Military Service Institution.

President.

Major-General NELSON A. MILES, U. S. Army.

Resident Vice-Presidents.

Major-General WESLEY MERRITT, U. S. A.

Bvt. Brig.-Gen. T. F. RODENBOUGH, U. S. A.

Secretary.

Col. WM. H. POWELL, U. S. A.

Treasurer.

Col. C. A. WOODRUFF, Sub. Dept.

Asst. Secretary.

Vacancy.

Vice-Treasurer.

Vacancy.

Executive Council.

Term ending 1905.

CORNISH, GEO. A., Major 15th Inf.

MILLS, A. L. Col., Supt. Mil. Academy.

REBER, SAMUEL, Capt. Signal Corps, U.S.A.

Vacancy.

STORY, J. P., Major 7th U. S. Artillery.

WEBB, A. S., Bvt. Major-General (late) U. S. A.

Term ending 1903.

BUTLER, J. G., Major Ord. Dept.

FIRBEGGER, G. J., Prof. U. S. Mil. Academy.

GILLESPIE, GEO. L., Colonel Corps Engineers.

VROOM, P. D., Lieut. Col. I. G. Dept.

WILSON, C. I., Col. Pay Dept.

Vacancy.

Term ending 1901.

Finance Committee.

GEO. BARRIGER.

Col. POWELL.

Major BUTLER.

BARRIGER, J. W. Bvt. B.-G. U. S. A.

CLOUS, J. W. Lieut.-Col. J. A. Dept.

HEIN, OTTO L., Lieut.-Col.

BREWERTON, H. F., Major U. S. A.

KNIGHT, J. G. D., Major Corps Engineers.

MOORE, JAS. M., Col. Q. M. Dept.

APPLETON, DANIEL, Col. 7th Regt., N.G., N.Y.

Library Committee.

General WEBB.

Publication Committee.

Colonels POWELL and CLOUS, and Major KNIGHT.

Branches

are established at West Point, Fort Leavenworth and Vancouver Barracks.

Membership dates from the first day of the calendar year in which the "application" is made, unless such application is made after October 1st, when the membership dates from the first day of the next calendar year.

Initiation fee and dues for first year \$2.50, the same amount for five years subsequently. After that two dollars per year. This includes the Journal.

NOTE.—Checks and Money Orders should be drawn to order of, and addressed to, "The Treasurer Military Service Institution," Governor's Island, New York Harbor. Yearly dues include Journal.

Changes of address should be reported promptly.



Prize Essay—1900.

I.—The following Resolution of Council is published for the information of all concerned :

Resolved, That a Prize of a Gold Medal, together with \$100 and a Certificate of Life Membership, be offered annually by THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES for the best essay on a military topic of current interest, the subject to be selected by the Executive Council, and \$50 to the first honorably mentioned essay. The Prizes will be awarded under the following conditions :

1. Competition to be open to all persons eligible to membership.
2. Each competitor shall send three copies of his Essay in a sealed envelope to the Secretary *on or before January 1, 1901*. The Essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the Essay, followed by a figure corresponding with the number of pages of MS.; a sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, should accompany the Essay. This envelope to be opened in the presence of the Council after the decision of the Board of Award has been received.
3. The prize shall be awarded upon the recommendation of a Board consisting of three suitable persons chosen by the Executive Council, who will be requested to designate *the Essay deemed worthy of the prize*; and also in their order of merit those deserving of honorable mention.
- In determining the essay worthy of the prize, the Board will be requested to consider its professional excellence, usefulness and valuable originality, as of the first importance, and its literary merit as of the second importance. Should members of the Board determine that no essay is worthy of the prize, they may designate one or more essays simply as of honorable mention; in either case, they will be requested to designate one essay as first honorable mention. Should the Board deem proper, it may recommend neither prize nor honorable mention. Should it be so desired, the recommendation of individual members will be considered as confidential by the Council.
4. The successful Essay shall be published in the Journal of the Institution, and the Essays deemed worthy of honorable mention shall be read before the Institution, or published, at the discretion of the Council.
5. Essays must not exceed twenty thousand words, or fifty pages of the size and style of the JOURNAL (exclusive of tables).

II.—The Subject selected by the Council at a meeting held November 11, 1899, for the Prize Essay of 1900, is

"THE ORGANIZATION OF A STAFF BEST ADAPTED
FOR THE UNITED STATES ARMY."

III.—The gentlemen chosen by the Council to constitute the Board of Award for the year 1900 are :

LIEUT. GENERAL JOHN M. SCHOFIELD, U. S. A.
BRIG. GENERAL JAS. H. WILSON, U. S. V.
PROF. G. J. FIEBEGER, U. S. MILITARY ACADEMY.

GOVERNOR'S ISLAND, N. Y.

WM. H. POWELL,

March, 1900.

Secretary.

JOURNAL
OF
THE MILITARY SERVICE INSTITUTION
OF THE
UNITED STATES.

"I cannot help plead to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because Peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—SHERMAN.

VOL. XXVI.

MAY, 1900.

NO. CV.

Prize Thesis.

THE IDEAL RATION FOR AN ARMY IN THE
TROPICS.*

By "*Ulmus*."

(CAPTAIN EDWARD L. MUNSON, ASS'T. SURGEON, U. S. A.)

SINCE the amount and character of food required for the preservation of health and vigor is influenced not only by climate but also, to a certain degree, by body-weight, age, race, custom of living and other varying factors, it will be premised at the outset that the army above referred to is composed only of white troops; preferably drawn from the same regions and recruited under the same physical requirements as are the military forces of the United States. It is further assumed that the present United States army ration, as established by law, will form the most satisfactory basis for the supply of

*In 1899, Dr. Louis L. Seaman (late Major-Surgeon, 1st U. S. Volunteer Engineers) presented to the Military Service Institution the sum of one hundred dollars in gold (or a medal of that value as the successful competitor might elect) for the best thesis on this subject. A Board of Award, consisting of Colonel Jno. F. Weston, Acting Commissary General U. S. A.; Lieut. Col. Charles Smart, Deputy Surgeon General U. S. A., and Lieut.-Col. Wm. E. Dougherty, 7th U. S. Infantry, was appointed, and all papers received were submitted to the Board with their *nommes de plume* only. The Board has, by unanimous vote, awarded the prize to the author of the paper signed "*Ulmus*."

food to troops of the above character, under any conditions of climate, since it contains only such nutrient articles as are commonly included in the diet of the civil class from which the American soldier is ordinarily drawn, and to the ready assimilation of which his system is accustomed through the influence of heredity as well as personal habit. There are then two questions to be answered :—Is the present army ration, considered as a whole, adapted to the needs of the United States soldier serving in the tropics? And if not, why not? These points having been determined, the remedy for existing defect can readily be deduced.

To the first question common experience returns an unqualified negative; best embodied in the words of the Court of Inquiry appointed to investigate the character of the food issued to troops during the war with Spain. This Court reported as follows :—"As to the effects of the food supply, having regard to sufficiency and quality, it seems to be clearly established that the army ration as supplied, without modification, to the troops serving in the West Indies, was by no means well adapted for use in a tropical climate. If this be true the unfitness of the ration should have manifested itself by its failure to keep the troops, who subsisted upon it, in the best possible condition for service in hot climates. This, in the opinion of the Court, is fully established in evidence."

The formulation of a reply to the second question involves, as a fundamental principle, a brief consideration of the physiology of hot climates—the determination of such alterations of body-function as may result from the climatic and environmental conditions obtaining in the tropics. It implies, also, the appreciation and comparison of the dietaries ordinarily used, under varying conditions of climate, by human beings of the military class in civil life; a general review of all facts based upon practical experience with the phenomena of nutrition, especially in low latitudes; and finally, a study of the existing army ration with reference to its modification for the tropics according to such principles as may appear to have been fairly established.

I. THE PHYSIOLOGY OF HOT CLIMATES.

The body temperature, in the tropics, is appreciably elevated

above the normal in new arrivals. Rattray,¹ in his investigations upon this point, obtained the following results :—

Hour of Day.	Temperate climate near England. Temp. 65° F. Av- erage of 10 days.	Tropics generally. Average of 51 days.	Equator. Temp. 84° F. Average of 7 days.
9 A. M.	98.1	98.51	98.5
3 P. M.	98.3	99.00	99.5
9 P. M.	98.5	98.47	99.1
Average.	98.3	98.66	99.02

Maurel² found an increase of body-heat, in individuals lately arrived in the West Indies, ranging from 0.5° to 0.9° F.; and Jousset³ noted an average increase, among the whites in Senegal, of even greater degree. Fayrer⁴ states that among European residents in Bengal the bodily temperature is 0.41° F. higher than the average of healthy persons in England.

Internal heat, in temperate climates, is readily lost by radiation and contact with the external air, by the heating of inspired air, by exhalation of moisture in the breath and by cutaneous evaporation. In the tropics, the difference between internal and external temperature is always very slight, and it may frequently happen that, for considerable periods, the heat of the surrounding atmosphere may even exceed that of the body. Further, the high degree of humidity ordinarily present in the tropics opposes evaporation of moisture. It therefore happens, through these changed conditions, that, instead of dissipating heat, the vital forces must frequently neutralize heat-reception in order to keep the bodily temperature down to normal. This produces an alteration in metabolism and throws additional work on the kidneys and liver, for an excess of nutritive material, which in temperate climates would be oxidized in the production of heat, requires here to be merely excreted.

A loss of body-weight occurs in hot countries, and the same is commonly observed in summer in the temperate zone. Rattray⁵ noted that with an average temperature of 80° F. the loss of weight among a body of marines averaged 11 lbs. per man during the period of one year. The decrease was greater when salt provisions were given and the air loaded with moisture; the loss of weight under hard labor being greater and more rapid. In the dry season 44 per cent., and in the wet season 76 per cent. of the individuals observed lost in weight. Rattray

concluded that this effect was due to the destructive influence of prolonged heat upon the cellular elements of the organism, together with imperfect oxygenation.

Adipose tissue, as a non-conductor, is undoubtedly potent in conserving internal heat and diminishing the effect of outside low temperature. In cold regions the proportion of fat in the organism is much greater than in warm climates, where the storing up of fats in human tissue is rare and even the artificial fattening of animals is accomplished with the greatest difficulty. In cold climates, on the contrary, considerable deposition of fatty material is the rule. The animal flesh of the far north, as seal, bear and walrus meat, is notoriously rich in fats; while the chief protection of the whale against the cold of the polar seas is the thick layer of blubber in which its muscular structure is enveloped. Viewed from this standpoint, the decrease of body-fat which occurs in the tropics may be looked upon as one of the most important processes by which the adaptation of the organism to conditions of higher temperature is accomplished. The discomfort of the obese during warm weather is proverbial; and hence loss of weight, provided the decrease is strictly limited to the adipose tissue alone, may be considered as wholly beneficial. It is obvious that any excess of foods, which in temperate climates is largely converted into systemic fat, cannot be devoted to this purpose in the tropics with facility or advantage.

Tropical heat directly lowers the pulse rate; Rattray¹ finding that the average rate of cardiac action in the tropics was less by $2\frac{1}{2}$ beats per minute than in the temperate zone. The following results were obtained by him:

HOUR.	Number of Observations.	Tropics.				Temperate Zone. Average.
		Lowest.	Highest.	Range.	Average.	
9 A. M.	53	66	112	46	84.6	91.7
3 P. M.	53	68	108	42	88.8	88.1
9 P. M.	49	73	110	37	87.3	90.5
Average.	—	—	—	—	87.5	90.1

This reduction of the pulse rate is doubtless related to the diminished respiratory function; and further observation proves what the latter fact suggests, viz.:—that in the tropics the pulse is diminished not only in frequency but in force. The low ar-

terial tension always noted in hot climates is a direct result of loss of fluid through increased perspiration favored by a relaxed state of the capillaries.

The first effect of tropical heat is to increase the respiratory capacity. This has been shown by Rattray¹ by means of the spirometer; his observations being subsequently confirmed by others. The results obtained by this investigator are as follows:

	Temp. Zone, near Eng- land, at sea. June. Therm. 65° F. Hygr. 2½° F.	Tropics, at sea, July. Therm. 75° F. Hygr. 4° F.	Tropics, at sea, August. Therm. 85° F. Hygr. 4° F.	Temp. Zone, near Eng- land, At sea. September Therm. 65° F. Hygr. 1½° F.	Temp. Zone, England, February. Therm. 42° F. Hygr. 3° F.
Average capacity of chest in cubic inches.	256.083	280.75	287.416	260.25	253.727

The average gain in lung capacity, in the tropics, noted by him, was 31.4163 cubic inches; the percentage of gain, as compared with the temperate zone, amounting to 12.24 per cent. Cullimore⁶, however, states that this increase in vital capacity does not continue, and that, after a period ranging from six months to two years, it falls below the level for Europe.

Closely allied to the foregoing is the influence of tropical climate on the frequency of respiration. In heated air chambers the rate of respiration becomes less in man; and Vierordt and Ludwig⁷ long since found that the same results were obtained in animals subjected to great heat. Rattray's¹ observations as to the comparative frequency of respirations in hot and cool climates are as follows:—

		Average Temperature. (Shade) Fahr.	Highest Number of Respirations.	Lowest Number of Respirations.	Average Number of Respirations.
Temper- ate Zone.	England in summer. (June)	62°	18	13.5	15.68
	England in winter. (Feb.)	42.25°	17.5	15	16.5
Tropics.	Equatorial dol- drums, out- ward voyage.	78.74°	14.5	11	12.74
	Equatorial dol- drums, return voyage.	78.6°	15	12	13.74

Not only is the respiratory action markedly decreased in hot climates, but the greater quantity of air inspired in the tropics does not make up for the diminished number of respirations in supplying the same amount of oxygen to the blood as in cold climates. Using the above data, Rattray¹ calculated the deficiency in the oxygen inspired in the tropics as follows:—

CLIMATE.	Cubic inches in each inspiration.	Number of inspirations per minute.	Cubic inches respired.
England	15	17	255
Tropics	16.836	14	235.704

Difference in favor of a temperate climate, 19.296 cubic inches or 7.567 per cent.

“ This decrease of 7.567 per cent. in the quantity of air respired daily diminishes the quantity of carbon which the lungs in ordinary circumstances can throw off in the tropics by 0.7567 oz.; 10 oz. being taken as the average amount thrown off in temperate climates, will give 9.243 oz. as the amount for the tropics. But as tropical air contains less oxygen for a given bulk than air of colder latitudes, through the expansion of gases by heat, the decarbonizing capabilities of the lungs in tropical latitudes will evidently be still further curtailed and the amount of carbon they can throw off considerably decreased. Air increases by $\frac{1}{480}$ its volume for every degree of heat, and the difference between the temperatures in which these experiments were carried on being 18 degrees F. (65° and 83° F.), if we reduce the amount inspired in the tropics by a $\frac{18}{480}$ part, this will give its equivalent bulk in the temperate zone, thus:—

$$\frac{235.704}{1 + \frac{18}{480}} = \frac{235.704}{1.0375} = 227.1846 \text{ cubic inches,}$$

which is equal to a decrease of 8.5194 cubic inches or 3.614 per cent. Then 255 minus 227.1846 cubic inches gives 27.8154 cubic inches per minute, or 1668.924 cubic inches per hour, or 40054.176 cubic inches per day = 10.907 per cent. as the grand total difference in favor of a temperate climate, after deducting the real increase in volume and correcting for expansion by heat. By again reducing the 9.243 oz. of carbon by 3.614 per

cent., or 0.33409 oz., we get 8.909 oz. as the total amount which the lungs throw off in the tropics, the difference between the tropical and extra-tropical qualities being 1.1028 oz."

The explanation of the variation in respiratory capacity, noted above, would appear to be due to the fact that there is no actual increase, for the tropics, in the size of the chest and enclosed lungs, but only an alteration in the relative proportion of blood and air contained in the latter. The bulk of the lungs remaining the same in the tropics as in colder latitudes, or being, as shown by Parkes⁸, even somewhat diminished from their comparative abeyance as excreting and heat-generating organs, the blood is diverted to the functionally excited and congested skin and liver, and permits the ingress of a larger quantity of air into the pulmonary air cells.

With the diminution in arterial tension there is, also, at each respiratory movement, less blood forced through the lungs than in the temperate climate—and this diminution necessarily implies a lessened value to the respiratory act. Further, the air in the tropics is rarefied, and pressure, which rules the conditions of pulmonary endosmosis, is diminished; hence it may be that the air reaches the pulmonary alveoles under pressure insufficient to properly force it into the pulmonary capillaries. The deficiency of oxygen taken into the organism in the tropics, as influenced by the above factors, may therefore be considered to be made up as follows:

Lessened value of respiratory act,	7.5 per cent.
Rarefaction of air,	3.6 " "
Diminished cardiac action,	3.0 " "
Diminished atmospheric pressure,	2.2 " "
	<hr/>
Total	16.3 " "

It is undoubtedly true that less oxygen is required in the high temperatures of the tropics. Through decreased exertion a smaller amount is required for the metamorphosis of waste particles; and, where lessened necessity and desire for food diminish the ingesta, less is required for direct combination with the nutritive elements in the production of energy. It is probable, however, that there is a somewhat increased absorption of oxygen in hot climates by the functionally excited skin—

which may, to a slight degree, act vicariously as a respiratory organ and so lessen the amount required by the lungs. Furthermore, the skin is aided in relieving the lungs in the decarbonizing process by the functionally excited liver and kidneys, which eliminate carbon in forms which do not require much oxygen for their formation, viz., as bile and uric acid.

The amount of sweat is greatly increased. Fonssagrives⁹ states that it is double the average amount secreted in Europe, often amounting to four or five pounds in the twenty-four hours. The amount of solids eliminated, however, is not proportionately increased. In addition, the secretion of sebum is more abundant than in temperate climates. In this connection Hill¹⁰ says: "The skin of the negro is a much more active organ of depuration than that of the white. It not merely exhales a larger proportion of aqueous fluid and carbonic acid from the blood, but it also elaborates a more unctuous secretion which, by its abundance and sensible properties, evidently possesses a considerable influence in counteracting the heating effects of the sun's rays upon the body and in carrying off the superabundant caloric."

As a result of increased perspiration there is a diminished excretion of urine; the reduction amounting to about one-third of the usual amount. Mourson¹¹ states that the diminution in the output of urea usually amounts to about ten or fifteen per cent. According to Eijkman¹², Europeans who had been in Java from two to six months excreted an average of 14.8 gm. of nitrogen daily, or 0.226 gm. per kilogram of body-weight, while those who had lived in the tropics 1 1/2 to 15 years excreted 12.802 gm. of nitrogen daily, or 0.193 gm. per kilogram of body-weight. Such decrease in eliminatory function on the part of the kidneys, according to Moore¹³, is followed by increased secretory action of the liver, whereby some effete matter is passed into the intestines with the bile. But increased liver action is accompanied by congestion; and congestion frequently by hepatic deposit and degeneration, with impairment of function.

Through the loss of fluid resulting from increased perspiration, there is a diminution in the secretion of saliva, mucus, gastric and pancreatic juices and bile. As a consequence, also, there is dryness of the throat and fauces and exaggeration of

thirst, weakness of appetite, impaired digestion, gastric fullness after eating and habitual constipation; these, according to Nielly¹⁴, being the digestive phenomena constantly observed in the tropics.

II. STANDARDS OF DIET.

Various attempts have been made by physiologists and chemists to devise standards representing the amounts of nutrients required, under varying conditions, for daily sustenance. There are, however, two great difficulties in the way of setting up such standards. The first is that there is not sufficient definite knowledge on the subject of nutrition to permit of an exact statement as to how much the average man, doing a certain class of work, requires for the maintenance of his body in vigorous condition and for the creation of energy expended in the form of heat and work. The second difficulty is due to the fact that different individuals of the same class differ widely in their demands for food and the use they make of it. One will eat more and the other less, while both do the same amount of work; or both will eat the same food and do the same amount of work, yet one will be fat and the other lean; or both have the same diet, and yet one will be strong and capable of performing considerable work while the other will be weak and able to accomplish little. Exactly why individuals differ in their ways of utilizing their food, and how to measure these differences and make rules to exactly fit them, are problems which are as yet far from solution. The nutrition of man is by no means a mere question of grams of protein and units of energy, and hence the subject of dietetics can never be reduced to an exact science. The best that can be done is to make general estimates; with the understanding that such estimates are only approximately correct, even for a special class. These are reached by observing the amount and relative proportion in the food actually consumed by the individuals composing the class in question, and also by experiments in which the income and outgo of the body are directly compared. But little investigation has as yet been done by the latter method, and present knowledge of nutrition may be considered to be based entirely upon observation and analysis of established dietaries. For laboring men performing moderate muscular work, the standards for daily diet,

according to Atwater¹⁵, have been variously fixed as follows:—

AUTHOR.	Nutrients in daily food.				
	Protein, gm.	Fats, gm.	Carbo- hydrates, gm.	Fuel Value, Calories	Nutrient ratio, (Protein to Energy.)
Playfair—England	11.778	49.83	530.01	3,140	1:5.4
Moleschott—Italy	13.137	40.77	548.13	3,160	1:4.9
Wolff—Germany	12.684	36.24	538.07	3,030	1:4.7
Voit—Germany	11.778	54.36	498.30	3,055	1:5.2
Atwater—United States	12.684	77.01 to 149.49	398.64 to 548.13	3,500	1:7

In determining the diet of the soldier, however, the above standards do not apply, since they are sufficient only for

TYPICAL HARD LABOR DIETARIES FOR THE NORTHERN PORTION OF THE TEMPERATE ZONE.

	Protein, gm.	Fats, gm.	Carbohydrates, gm.	Fuel Value, Calories.	Nitrogen, gm.	Nutritive Ratio, (Protein to Energy.)
ENGLAND.						
Royal Engineers, active work. (Playfair ¹⁶ .)	144	83	631	3,950	23.04	1:5.7
SWEDEN.						
Mechanics. (Hultgren and Landergren ¹⁷ .)	189	110	714	4,725	30.24	1:5.1
RUSSIA.						
Factory operatives, near Moscow. (Erismann ¹⁸ .)	132	80	584	3,680	21.11	1:5.8
GERMANY.						
Machinists, Krupp Gun Works. (Prausnitz ¹⁹ .)	139	113	677	4,395	22.24	1:6.7
SOUTHERN AUSTRIA.						
Farm laborers, at harvesting. (Ohlmüller ²⁰ .)	159	62	977	5,235	25.44	1:7
UNITED STATES.						
Mechanics. Massachusetts and Connecticut. (Atwater ²¹ .)	154	227	626	5,275	24.64	1:7.5
United States Navy Ration. (Atwater ²² .)	143	184	520	5,000	22.88	1:6.8
United States Army Ration.	164.2	97.8	600	4,061	25.33	1:5
Average	152	119.5	666	4,540	24.36	1:6.2

Total Carbon, 463.89, gm. Nitrogen to carbon, 1:19.4.

moderate labor and are not capable of furnishing the requisite energy for the muscular work of high degree which troops, from the nature of their service, may at any time be called upon to perform. For the requisite data in this respect it is necessary to refer to the dietaries of men at hard labor; the following table being intentionally made to include dietaries of this character for various countries in the northern portion of the temperate zone, since the United States army is heterogeneous in its composition and the foreign-born element—largely derived from the countries named—undoubtedly brings with it into the military service the dietetic preferences resulting from previous habit.

As compared with the United States army ration, included in the preceding table, the average of these dietaries is seen to be slightly in excess in fats, carbohydrates and fuel value, but deficient in protein. On the whole, however, the difference is not great, and the sufficiency in amount and proper proportion of the food provided for the soldier serving in the more northern portion of the United States is abundantly demonstrated.

TYPICAL WORKING DIETS OF THE SOUTHERN PORTION OF THE
TEMPERATE ZONE.

	Protein, gm.	Fats, gm.	Carbohydrates, gm.	Fuel value, Calories.	Nitrogen, gm.	Nutritive Ratio, (Protein to Energy.)
ITALY. Mechanics. (Manfredi ²² .)	76	38	396	2,290	10.55	1:6.3
ITALY. Army ration, peace. (Moleschott ²⁴ .)	114	14	592	3,095	18.24	1:5.5
JAPAN. Prisoners at work, Tokio (Eijkmann ²⁵ .)	66	9	544	2,585	10.66	1:8.5
UNITED STATES MEXICAN. New Mexico, families. (Goss ²⁶ .)	68	73	572	3,320	10.88	1:8.3
UNITED STATES NEGRO. Southern Gulf States, families. (Atwater and Woods ²⁷ .)	62	132	436	3,270	9.90	1:11.8
Average.	77	53.4	508	3,012	10.72	1:8

In the warmer portions of the temperate zone, but still well outside the tropics, the quantities of the several proximate principles required by the inhabitants are markedly inferior to the figures above given. The dietaries of these regions have not been as thoroughly studied as have those of countries lying in a cooler climate, but the data, page 319, are sufficiently comprehensive to be of both interest and practical importance.

These figures, however, are based upon races, with the exception of the United States negro, of less body-weight than those of colder climates. Hence they are not properly comparable with similar figures for the latter class until reduced to a common standard in this respect, since, according to Church²⁶, the capacity for muscular work may be considered as closely related to body-weight. If it be assumed that laborers in the southern portion of the temperate zone have an average weight of 125 pounds, while the corresponding class in the cooler part of the same zone have an average weight of 145 pounds—about that of the mean for the United States army—the above average figures should be corrected as follows:—

Protein, gm.	Fats, gm.	Carbohydrates, gm.	Fuel Value, Calories.	Nitrogen, gm.	Nutritive Ratio, (Protein to Energy.)
89.3	61.94	589.28	3493	14.3	1.8
Total carbon, 354.72 gm. Nitrogen to carbon, 1:2.48.					

While the foods habitually used by natives of the tropics are well known to differ widely in character from those employed in temperate climates, and while the existence of a certain deficiency in the native dietary in the matter of protein and fats has long been recognized, there has been but little investigation as to the force value of the tropical dietary or to the exact quantities and relative proportions of the several proximate principles entering into its composition. Recourse to several large medical and technical libraries, together with application to the Department of Agriculture for information on this subject have, however, shown that the question of tropical dietaries has been locally studied by Maurel², in the island of Guadeloupe; by Church²⁸ in British India, by Eijkman²⁹, in Java, and by Lapicque³⁰ in Abyssinia. The results obtained by these investigators in diverse portions of the tropical zone,

although but few in number, nevertheless agree so closely in all respects that they may be accepted as conclusive, and their average as fairly representing the nutrient standard of the laboring class of natives throughout the tropics. Using figures given by Maurel², the average diet for the West Indian native, at hard labor, appears to be made up about as follows :—

ARTICLES.	Amount in gms.	Fats, gm.	Carbo-hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
Fresh Beef	20.0	3.16		2.94	0.470	38
Chicken and Fish (mullet)	40.0	12.80		8.40	1.344	30
.....average						
Rice	340.2	13.60	268.75	26.51	4.245	1082
Yams	566.0	1.13	141.78	5.66	0.905	616
Bananas, ripe	566.0	3.39	118.86	7.35	1.176	575.
Sugar Cane	340.2		52.25	5.06	0.800	234.
Total	1872.4	34.08	581.64	55.94	8.940	2575

Total carbon, 302.85 gm. Nitrogen to carbon, 1:37.8.

Eijkman²⁰ gives the ordinary food eaten by the Malay as consisting, per day, of 800 to 1200 gm. of boiled rice, 150 to 200 gm. of ducks' eggs, 60 gm. of meat or fish, 150 to 250 gm. of pastry rather free from fat—and a varying amount of fresh fruits. The average diet of a number of Malay laborers was determined by him to have the following composition :—

Fats, gm.	Carbohydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel value, Calories.	Nutritive ratio, (Protein to energy.)
30.2	471.9	73.3	11.73	2512	1:7.4

Lapicque³⁰ states that the native Abyssinian soldiers in the Italian service at Massowah subsist almost entirely on the native durrha (kafir corn) made into cakes without fat; various sharp sauces, and sometimes ground beans or lentils, being used as accessories. Meat is eaten not more than once weekly and is regarded rather as a condiment than a staple article of food. As a result of a large number of analyses the dietary of the Abyssinian soldier was found by Lapicque³⁰ to be made up as follows :—

Fats, gm.	Carbohydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel value, Calories.	Nutritive ratio, (Protein to energy.)
30.0	360.0	50.0	8.0	2100	1:8.7

In British India, according to Church²⁸, the coolie rarely tastes animal food of any character, but subsists almost entirely upon rice and soy beans; the latter containing a large proportion of vegetable oil as well as nitrogen. This ordinary diet of the coolie laborer, in proximate composition and food value, is thus determined by Church:—

Fats, gm.	Carbohydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel value, Calories.	Nutrient ratio, (Protein to energy.)
33.1	355.8	61.6	9.69	2013	1:7.7

The average of the above four tropical dietaries is as follows:—

Fats, gm.	Carbohydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel value, Calories.	Nutritive ratio, (Protein to energy.)
31.8	442.2	60.21	9.63	2300	1:8.8

For purposes of comparison, however, these figures, like those for the inhabitants of the warmer portions of the temperate zone, must be reduced to the common standard of body-weight of 145 pounds—the average weight of laborers in the under-sized races of the tropics being regarded as about 115 pounds—and the above figures are thus proportionately increased, as shown in the following table:—

Fats, gm.	Carbohydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel value, Calories.	Nutritive ratio, (Protein to energy.)
40.0	560.01	76.18	12.18	2900	1:8.8

Total carbon, 318.13 gm. Nitrogen to carbon, 1:26.1

On contrasting the several dietaries which have been shown to obtain with men having an average weight of 145 pounds, engaged at hard muscular labor, in the northern portion of the temperate zone, the southern portion of the temperate zone and in the tropics, the difference in the quantity and character of food taken is seen to be most marked, particularly in relation to the protein and fats. The difference in force value between these dietaries is also very great, and even the carbohydrates, contrary to usual ideas, are diminished in the

tropics in no small degree. These typical dietaries are shown in the following table:—

CLIMATE.	Fats, gm.	Carbohydrates, gm.	Protein, gm.	Nitrogen gm.	Carbon, gm.	Fuel value, Calories.	Relation of nitro- gen to carbon.	Nutrient ratio, (Protein to energy.)
Northern portion of temperate zone.	119.5	666	152	24.36	463.89	4540	1:19.4	1:6.2
Southern portion of temperate zone.	61.9	589.2	89.3	14.3	354.73	3493	1:24.8	1:8
Tropics.	40.0	560	76.18	12.18	318.13	2900	1:26.1	1:8.8

It may, however, be urged that the marked variation in the composition and force value apparent in the above dietaries is due rather to racial preference than to climatic influence. This claim would scarcely appear to be well founded. It is a matter of common observation that natives of the tropics removed to colder climates soon adopt the dietetic customs of the region in which they may be resident. Further, it should be noted that Atwater and Woods²⁷ showed the average daily consumption of food, per capita, in 20 negro families in the rural districts of southern Alabama, to consist of 62 gm. of protein, 132 gm. of fats, and 436 gm. of carbohydrates, and to possess a force value of 3012 calories; while Frissell and Bevier³¹ found that the average dietary of 19 negro families of the same class, resident in northern Virginia, yielded 109 gm. of protein, 159 gm. of fats and 444 gm. of carbohydrates—with a force value of 3745 calories. It is idle to assume that this great difference in the composition and nutrient value of the dietaries for corresponding classes of the same race, resident in different latitudes, can be dependent upon other than climatic conditions. It is evident, therefore, that the food of human beings, both in relative proportion and nutrient quality, varies directly with temperature as approximately expressed by latitude.

The standard dietaries having been established for laboring men performing hard work under diverse climatic conditions, it becomes necessary to examine the present United States army ration with a view of ascertaining the nutritive value of its several components, and determining whether the quantities in

ARTICLES OF RATION	Quantities per ration ounces	Per cent. of				Amounts present in ration (Grammes)				Fuel value per ration Calories.
		Water	Protein	Nitrogen	Fat	Carbo-hydrates	Protein	Nitrogen	Fat	
Fresh Beef (fore and hind quarters) or Fresh Mutton or Pork or Bacon	20	50.5	14.7	2.35	15.8	—	83.35	13.3	89.5	—
	20	43.8	16.3	2.60	22.2	—	92.4	14.7	125.8	1180
	12	16.2	16.2	2.59	66.2	—	55.08	8.8	225.08	1440
	12	16.8	9.2	1.47	61.8	—	31.28	4.99	210.12	2187
	22	49.6	14.2	2.27	22.8	—	88.6	14.16	142.3	2085
or Salt Beef or Dried Fish (cod) or Fresh Fish or Fresh Fish (cod, whole)	14	40.3	16.00	2.56	0.4	—	63.52	10.16	1.59	1534
	18	38.7	8.00	1.28	0.2	—	40.8	6.5	1.02	276
Flour or Soft Bread or Hard Bread or Corn Meal	18	12.8	10.8	1.55	1.1	74.6	55.08	7.9	5.6	155
	18	35.4	9.5	1.36	1.2	52.8	48.45	6.9	6.12	380.46
	16	14.2	2.30	1.5	72.8	—	65.7	10.44	5.9	269.38
	20	12.9	8.9	1.41	2.2	75.1	50.4	7.99	12.4	330.5
	2	13.2	22.3	3.56	1.8	59.1	15.16	2.42	1.22	425.8
Beans or Rice or Peas or Hominy or Potatoes	1	12.4	7.8	1.24	.4	79.00	3.5	.56	.18	240
	2	10.8	8.1	3.85	1.1	61.5	16.38	2.62	.75	35.55
	1	11.9	8.2	1.31	.6	78.9	3.69	.59	.27	163
	16	78.9	2.1	0.336	.1	18.00	9.5	1.52	.45	246
	16	78.8	1.9	0.312	.16	16.1	8.6	1.4	.72	172
Onions 20% or Potatoes 70% and canned Tomatoes 30% or Dried Fruits (average of varieties issued)	16	82.6	1.8	0.300	.12	14.5	8.17	1.36	.54	380
	2	20.5	2.9	0.334	1.8	59.7	1.18	.19	1.02	73.09
Sugar or Molasses	2 1/8 gill	—	—	—	—	95.00	—	—	—	340
	1 1/8 gill	25.1	2.45	nitrogenous matter present, probably not protein	—	69.3	—	—	—	207
or Cane Syrup	1 1/8 gill	—	—	—	—	69.5	—	—	—	147
										204
										198
										198

which their issue is authorized will permit their combination in a daily allowance, not only desirable in theory and well qualified to maintain the health and vigor of the soldier, but also thoroughly practicable under all conditions of military service.

The foregoing table, compiled from data elaborated by Atwater and Bryant³², shows the chemical composition and nutrient values of the various articles of the ration; the soap and candle, coffee and seasoning components, which are merely accessory to the nutritive articles and possess little if any force value, not being taken into consideration as requiring no alteration in quantity for the tropics.

From the above table it is apparent that the ordinary variation of the articles composing the food of the soldier, as contemplated in the establishment of the ration, will not furnish dietaries of the same proximate composition or nutritive value. How great this difference may be, from day to day, it is of importance to determine.

Using the figures just given, the proximate composition and nutrient value of the maximum quantity of food material which may be drawn as a daily allowance by the United States soldier is seen to be as follows:—

ARTICLES.	Quantity in ounces.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
Fresh Beef	20.0	89.50	—	83.35	13.30	1180
Flour	18.0	5.60	380.46	55.08	7.90	1850
Beans	2.4	1.22	40.18	15.16	2.42	240
Potatoes	16.0	0.45	81.70	9.50	1.52	380
Dried Fruit	2.0	1.02	33.80	1.18	0.19	147
Sugar	2.4	—	64.60	—	—	264
Total	60.8	97.79	600.74	164.27	25.33	4061

Total carbon, 427.03 gm. Nitrogen to carbon, 1:17.

In the following table are included those articles of food which, taken together, may be considered to constitute the ordinary ration for troops in the field or during campaign.

ARTICLES.	Quantity in ounces.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
Bacon	12.0	210.12	—	31.28	4.99	2085
Hard Bread	16.0	5.90	330.50	65.70	10.44	1712
Beans	2.4	1.22	40.18	15.16	2.42	240
Dried Fruit	2.0	1.02	33.80	1.18	0.27	147
Sugar	2.4	—	64.60	—	—	264
Total	34.8	218.26	489.08	113.26	18.12	4448

Total carbon, 432.78 gm. Nitrogen to carbon, 1:23.8.

A selection of food-stuffs which may fairly be assumed to represent the usual dietary of the soldier in garrison is shown in the following table.

ARTICLES.	Quantity in ounces.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
Fresh Beef	20.0	89.50	—	83.35	13.30	1180
Soft Bread	18.0	6.12	269.28	48.45	6.90	1355
Potatoes and On- ions	16.0	0.72	73.09	8.60	1.40	340
Dried Fruit	2.0	1.02	33.80	1.18	0.19	147
Sugar	2.4	—	64.60	—	—	264
Total	58.4	97.36	440.77	141.58	21.79	3296
Total carbon, 344.57 gm. Nitrogen to carbon, 1:16.3.						

The following dietary combines the several articles of the ration which approach most closely in character to the foods commonly employed by natives of the tropics.

ARTICLES.	Quantity in ounces.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
Fresh Fish (cod, whole)	18.0	1.02	—	40.80	6.50	155
Soft Bread	18.0	6.12	269.28	48.45	6.90	1355
Rice	1.6	0.18	35.55	3.50	0.56	163
Potatoes and To- matoes	16.0	0.54	65.80	8.17	1.36	297
Dried Fruits	2.0	1.02	33.80	1.18	0.19	147
Sugar	2.4	—	64.60	—	—	264
Total	56.0	8.88	409.03	102.10	15.51	2321
Total carbon, 241.84 gm. Nitrogen to carbon, 1:16.7.						

On consideration of the preceding four dietaries it is seen that the first combination, as compared with the average dietary for individuals of the same weight native to the tropics, presents a great excess in protein, fats and fuel values—even the carbohydrates being largely increased. In the second arrangement the fats are present in five times the quantity apparently sufficient and desirable under tropical standards, the protein is in considerable excess and the fuel value unnecessarily high—while the deficiency in carbohydrates is noticeable. In the third dietary the fats and protein are both in excess, but the quantity of carbohydrates is markedly deficient. The force value of this combination is not far from the actual requirements of the system in the tropics, as regards energy. In the last arrangement of the articles of the

ration the protein is seen to be present in slight excess, while the fats and carbohydrates are markedly deficient—the former especially so. The force value of this dietary, also, is wholly insufficient to meet the needs of even moderate muscular labor. The conclusion is therefore justifiable that while the several articles composing the ration are well selected, the quantities in which their issue is now authorized are so proportioned that their combination in a dietary, approximately similar to the nutrient standard of native laborers in the tropics, even under conditions of equality as regards weight, is both theoretically and practically impossible. It may therefore be accepted that the proportions of the ration as at present existing do not permit the fulfillment of proper dietary requirements under conditions of tropical service.

III. THE RATION FOR TROPICAL SERVICE.

Quantity.—Prolonged heat exerts an unfavorable influence upon the digestive and assimilative functions. Hence work should not be imposed upon the alimentary tract in excess of its powers, and the diet should be restricted as compared with that of temperate climates; particularly since both diarrhœa and dysentery are known to be favored by the presence of a large amount of undigested food in the intestines, while tropical anæmia may be hastened by mal-assimilation resulting from over-taxation of the digestive powers. The respiration, as has already been shown, is much less energetic after arrival in the tropics; and this, combined with rarefaction of the atmosphere and other factors, results in a much less amount of oxygen being introduced into the blood than is the case in temperate climates. If the reduced quantity of oxygen available finds in the organism an excess of alimentary substances it is evident that oxidation of the latter will be delayed even if ultimately complete, and metabolic equilibrium is thus disturbed. Further, according to Foster³³, the amount of heat evolved by the internal organs depends largely on their stimulation. In the case of the salivary gland the temperature of the saliva during irritation of the chorda has been found to be 1° to 1.5° higher than that of the blood in the carotid artery at the same time; and the same author states that, in all probability, the investigation

of other secreting glandular organs, under excitement, would yield similar results. Particularly is this true of the liver, an organ in which a large amount of heat is produced; as is shown by the fact that a temperature of 40.73°C . has been observed in the hepatic vein, while that of the right heart was 37.70°C ., and that of the inferior vena cava 38.35°C . Hence the excitation of the liver, either through the improper selection of foods or an excess of nutritive material requiring disposal, is to be avoided in hot climates. It is obvious that the consumption of any considerable amount of food for the production of internal heat is here as unnecessary as it is undesirable; while the nutritive needs of the organism require a smaller amount of material to repair the systemic losses resulting from the decreased oxidation and normally less active life of the tropics.

Protein and Nitrogen.—The proteid molecule, as shown by Krukenberg³⁴, Pavy³⁵, Schuetzenberger³⁶ and others, is not to be considered as a perfect chemic body, but as a complex, composite mixture of a glucosidal nature, containing nitrogenous, carbohydratic and fatty radicles. Protein has been experimentally decomposed into these radicles, outside the body, by the above investigators; and it has been determined by Cohnheim³⁷, Seegen³⁸, Külz³⁹, Mering⁴⁰ and others, through artificial conditions of diet, that the same cleavage occurs as a result of the processes of oxidation within the organism. The non-nitrogenous radicles have as their object the production of energy; and when the systemic needs are satisfied as regards nitrogen it is obvious that, for the tropics, such force-food as may still be required is preferably supplied in the simple proximate forms not requiring such cleavage—with its necessary production of heat—and not yielding, in the process of decomposition, considerable quantities of a substance which is in excess of the immediate requirements of the organism, and, as stated by Foster³³, can be stored up in but extremely small part and hence merely requires elimination as an excrementitious body. Particularly is this the case where the need for internal heat is obviously lessened and where the renal function, from the causes already mentioned, operates at a disadvantage. It is hence extremely important that protein be supplied in the tropics purely for the purpose of systemic repair

and not be relied upon for the creation of any considerable proportion of the energy required by the organism. The ingestion of a certain amount of nitrogen is indisputably necessary to health, and with its deficiency the food ceases to be digested and a condition of inanition ensues. This, however, is no argument for its supply in excessive amount; and the nitrogenous intake—for the most satisfactory accomplishment of the metabolic processes—should be directly proportioned to body waste. According to Gayet⁴¹, the average man at ordinary labor, in the temperate zone, loses 20 grammes of nitrogen daily—nearly all of which is in the urine. Eijkman¹², in Java, found that the average excretion of nitrogen in a similar class of Malays was 7.817 grammes; which, being reduced to a common standard of weight at 145 lbs.—the Malays averaging 111 lbs.—gives 10.21 grammes, or about one-half the quantity ordinarily eliminated in temperate regions. The nitrogen, in the standard diets for laboring men in cool climates, proposed as above by Playfair¹⁶, Moleschott²⁴, Atwater¹⁵, and others, varies from 18.35 grammes to 20.29 grammes. Notter and Firth⁴² give 11.6 grammes as the daily allowance for a mere subsistence diet in temperate regions and state that even as much as 32 gm. may be required during great exertion.

On referring to the table given elsewhere, showing the dietaries actually employed by laboring classes in the tropics, reduced to the above standard of weight for purposes of comparison, it is seen that the hard-working native of the low latitudes ingests an average of 12.83 gm. of nitrogen; or an amount only slightly in excess of the requirements for bare subsistence in temperate climates. This deficiency in the amount of nitrogen ingested by the native is, however, apparent rather than real; for the above quantity, small though it may seem, has been shown by experience, through untold generations, to be not only sufficient for the maintenance of life and health in the tropics but also ample for the greater demands upon the organism resulting from labor. Maurel², in his study of the natives of Guadeloupe and Guiana, found that their diet was almost wholly vegetable. From estimates based on official figures, he showed that the inhabitants of Guadeloupe used a daily average of only twenty grammes of meat per capita, and that only one-

seventh of the vegetable food was imported in the form of the cereals of the temperate zone; the remaining six-sevenths being made up of yams, cassava, sweet potatoes, bananas, mangoes and other fruits. Similar customs as regards food are said by Eijkman¹² to prevail among the Javanese Malays; and in India and Abyssinia, Church²⁸ and Lapicque³⁰ found that the natives rarely used animal material in any form. For natives of the tropics it may therefore be accepted that the vegetable kingdom is almost wholly the source from which their food is drawn, and that but little of the vegetable material so used is imported in the form of cereals grown in cool climates. These facts are extremely important, for data supplied by the Department of Agriculture⁴³ show that fruits and vegetables grown in the tropics, at least as far as the western hemisphere is concerned, are much less rich in nitrogenous constituents than are the vegetable foods indigenous to the temperate zone. A comparison of the vegetables most commonly employed as staple foods in the tropics and in cool climates, shows the following differences:—

VEGETABLE FOODS CHIEFLY USED IN THE TROPICS.

	Water, per cent.	Protein, per cent.	Nitrogen, per cent.	Fat, per cent.	Carbo- hydrates, per cent.	Crude Fibre, per cent.	Ash, per cent.
Cassava	61.30	0.64	0.102	0.17	36.50	0.88	0.51
Sweet Potato (edible portion)	69.0	1.80	0.288	.70	26.10	1.30	1.10
Yam (edible portion)	71.86	1.00	0.160	.20	25.05	1.03	.86
Sugar Cane	75.41	1.49	0.230	—	15.36	7.04	.69
Ripe Bananas (edible portion)	75.3	1.3	0.208	.6	21.0	1.0	.8
Rice	12.3	8.0	1.280	.3	78.8	.2	.4

Average amount of nitrogen, per cent., 0.378.

VEGETABLE FOODS CHIEFLY USED IN TEMPERATE CLIMATES.

	Water, per cent.	Protein, per cent.	Nitrogen, per cent.	Fat, per cent.	Carbo- hydrates, per cent.	Crude Fibre, per cent.	Ash, per cent.
White Potato (edible portion)	78.3	2.2	0.352	.1	18.0	.4	1.0
Wheat Flour	12.8	10.8	1.552	1.1	74.6	.2	.5
Oatmeal	7.3	16.1	2.575	7.2	66.6	.9	1.9
Corn Meal, granular	12.5	9.2	1.472	1.9	74.4	1.0	1.0
Barley Flour	11.9	10.5	1.520	2.2	66.3	6.5	2.6
Rye	12.7	7.1	1.135	.9	78.5	—	.8

Average amount of nitrogen, per cent., 1.434.

In these two groups of food-stuffs the great inferiority of the vegetable diet of the native of the tropics, as regards available nitrogen, is at once apparent—the vegetables and cereals most commonly used as food in the temperate zone containing, in a given weight, almost exactly four times more nitrogenous material. Hence it is evident that the native diet in the tropics is doubly inferior as regards nitrogen, meat being but little used while the vegetable foods which replace the cereals of temperate climates contain but a small proportion of this element.

The fact may here be emphasized that nature has laid down certain laws as regards alimentation which it is the highest wisdom to follow. It is not a matter of theory but an unrecognized chemical instinct which leads the native of the tropics to make his choice of diet and nature's provision of aliment accord so closely. The inhabitants of warm climates, civilized and savage, succeeded in properly adjusting their diet through experience alone long before any theories as to the proper diet for such climates were advanced; and it is worthy of note that not only is a light vegetable diet, containing proportionately little nitrogen, sufficient to maintain health and strength in the native of the tropics, but whites even, who may have been born in hot countries, intuitively adopt a similar regimen and thrive upon it. Habit, in the use of certain classes of food-stuffs, certainly operates against a change of diet; yet Eijkman¹² found in Java, that the food of resident whites—born in Europe—approached the native dietary, presenting a marked decrease in both protein and fats. Analyses of this modified European diet gave an average of 99.6 gm. of protein, 83.8 gm. of fats and 284.2 gm. of carbohydrates, to this being added 28.5 gm. of alcohol. The force-value of this dietary was 2470 calories. The fact that an excess of meat in any form, greasy meat especially, soon becomes distasteful in the tropics, is certainly a powerful argument for an alteration of diet in favor of a diminution of protein as well as fats.

The most striking effect of a highly nitrogenous diet is the increase in the nitrogenous metabolism of the body, and to a lesser degree of the non-nitrogenous also. This increased metabolism, through the amount of heat necessarily generated in the process, is clearly undesirable in warm climates. Further,

the deficient supply of oxygen available in the tropics impairs the combustion of proteids, and under such conditions the overloaded system habitually contains an undue amount of un-oxidized nitrogenous matter, which, in an oxidized state, would be expelled by the kidneys. Albuminates, and nitrogenous compounds generally, undergo change and are excreted principally as urea; therefore an excess of albuminous food throws more work on the kidneys, which may induce disease. Nitrogenous matter being in excess and the secretion of the urine by the kidneys being decreased, there may be deposits in the urinary passages in the shape of uric acid, or in other parts as urates, through the lack of sufficient fluid for their solution.

As to the liver, Rochard⁴⁴, Moore¹³, Nielly¹⁴, Rattray⁵, Jousset³, Maurel⁴⁵, Treille⁴⁶ and others have observed the directly injurious influence of a too nitrogenous and greasy diet in the production of disorders of this organ. Hepatic disease, while extremely common among the whites of India and other tropical regions, is rare among the native population. The idea has been advanced that the native enjoys an immunity to this affection as a result of acclimation rather than diet; but this theory is contradicted by Maurel⁴⁵, who states that he—with others—has repeatedly seen congestion of the liver occurring in natives of the tropics, who, a few months before, by reason of circumstances, had adopted the much more nitrogenous diet of the temperate zone. This view is upheld by a recent medical publication⁴⁶, which calls attention to the greatly increased liability to disease of the liver among Asiatics who have become semi-Europeanized, and connects it with the fact that these individuals crave and use the same bulk of the more concentrated and nitrogenous diet of the European as they do of their own native foods. Further, to show the injurious effect of a nitrogenous diet in hot countries, laboratory experiments are not wanting. Maurel⁴⁵, in Guiana, fed a series of rabbits upon a vegetable diet while another group was fed entirely on cheese. The investigation extended over a period of ten months and the results were conclusive; showing a less increase in the weight of the first group than occurred in the cheese-fed rabbits. Not only also was the total weight of the second series of animals much greater than that of the first, but the disparity in hepatic

enlargement was even more marked; the livers of the latter class not only showing disproportionate increase in size but also exhibiting manifest changes—being hard, mottled and presenting a condition of hypertrophic cirrhosis. In a second series of experiments the results, though positive, were slightly less marked, since the experimental feeding continued for only six instead of ten months and the influence of a nitrogenous diet was not so pronounced upon the liver. The following results were obtained by him :—

DURATION OF EXPERIMENT, 10 MONTHS.

June, 1881, to April, 1882.

	Total Weight.		At the end of the experiment.	
	Before experiment.	After experiment.	Weight of liver.	Relation of weight of liver to total weight.
Rabbit No. 1 (Vegetable diet)	650 gm.	1210 gm.	37 gm.	1:32.70
Rabbit No. 2 (Cheese diet)	580 gm.	1780 gm.	86 gm.	1:20.69

SECOND EXPERIMENT, DURATION 6 MONTHS,

April, 1882, to October, 1882.

RABBITS.	Diet.	Total Weight.		At the end of the experiment.	
		Before experiment.	After experiment.	Weight of liver.	Relation of weight of liver to total weight.
No. 1.	Vegetable	629 gm.	1160 gm.	33 gm.	1:35.15
No. 2.	"	645 "	1880 "	44 "	1:42.72
No. 3.	Cheese	467 "	1365 "	48 "	1:28.44
No. 4.	"	565 "	1370 "	45 "	1:30.44

For the three rabbits given a vegetable diet the ratio of the weight of the liver to the total body-weight was 1:36.85 at the time of death; while the ratio for the cheese-fed rabbits in this respect was 1:26.52. In view of the clinical experience and experimental results, as noted above, no further argument as to the influence of a too nitrogenous diet in the tropics, in provoking liver disease, is required.

From what has been said it is evident that the nitrogenous constituents of the United States army ration for troops serving in the tropics may be safely and advantageously reduced. This is preferably accomplished at the expense of the meat compo-

ment, which, besides protein, also contains a considerable proportion of fats. A complete fall to the nitrogenous level of the native of the tropics is, however, undesirable, since a single nutrient standard for the military service must always contain within itself the elements necessary in emergency to repair the losses incident to the greatest physical effort of which the human being is capable. For this reason the daily allowance of protein provided for the soldier, unless separate dietary standards for conditions of peace and war prevail, must necessarily be in considerable excess of the actual needs of the organism under ordinary circumstances. Hence it is probable that the daily allowance of nitrogen cannot be safely reduced below 16 grammes—represented by 100 gm. of protein—even though this amount is in considerable proportionate excess of the nitrogenous normal of the corresponding native class of the tropics.

Fats.—In hot climates, where the human organism instinctively feels the need of a loss of heat rather than its creation, the consumption of fat—a heating food of the highest degree—should be reduced to the minimum and largely replaced by that of sugars and starches. Rubner⁴⁸ calculated that 100 parts of fat burned within the body yield as much heat as 232 parts of starch or cane sugar; and the distaste for fats in any considerable quantity, so early acquired in the tropics and so noticeable during the summer weather of temperate climates, may be considered as evidence of an unconscious but instinctive recognition of the fact that a dietary of decreased caloric value is sufficient for the needs of the organism exposed to high temperatures—the more concentrated heat producers being rejected while the desired distention of the stomach is secured by bulky vegetable foods of lower potential value. This dislike of fat under conditions of high temperature is too fully appreciated to require the production of evidence on this point. It is of interest, however, to recall the aversion with which the ration of bacon was regarded by troops in Cuba and Porto Rico during the war with Spain; while Cardwell⁴⁹ reported from Manila that “the salt meat (bacon) was in great part wasted and need not have been issued except in sufficient quantity to provide cooking fat.”

As compared with carbohydrates, fats, as a whole, are not-

ably less digestible and thus increase the evolution of heat through the more active chemical processes in the intestine. Furthermore, they are burned with more difficulty within the organism; since there is sufficient oxygen in the carbohydrate itself to form water with the hydrogen present, while fats require additional oxygen to combine with their hydrogen for their combustion and elimination. Hence, in herbivora, according to Foster³³, a larger proportion of the oxygen consumed reappears in the form of carbonic acid than is the case with carnivora, subsisting chiefly on proteid and fat. That this difference is by no means small is shown by the fact that the so-called respiratory quotient, obtained by dividing the excretion of carbonic acid by the consumption of oxygen, by volumes, is about 0.9 in herbivora and about 0.7 in carnivora; a difference of 22 per cent. In the tropics, however, it has already been shown that there is a greatly diminished value, as regards oxygenation, to the respiratory act; and under such circumstances the amount of oxygen, already small, available for the needs of the organism as regards the elimination of carbon, would be seriously encroached upon in the oxidation of a diet largely composed of fatty material. Furthermore, an excess of fats in the food calls for increased hepatic action in the production of bile; since it has been abundantly demonstrated that the latter is a prominent factor in the digestion of fats—as shown by the fatty stools which follow obstruction or ligature of the bile ducts. That this hyperstimulation of the liver—with its many evil results, elsewhere discussed—actually does occur in the tropics, where more fats are introduced into the system than can be readily utilized, is shown by the bilious diathesis, so common among high livers in warm climates, as characterized by excessive bile production and later by hepatic congestion. Fats and carbohydrates are much more akin to each other than is either to proteid; and if, as stated by Foster³³, fat may be converted into sugar either when about to be incorporated into the organism or when being decomposed into its ultimate products, it might reasonably be expected that carbohydrates and proteid—with little or no fat—would form a satisfactory diet. That this conclusion is, in practice, largely borne out by facts is shown by

reference to the foregoing tables, in which the fatty constituents of the vegetables ordinarily composing the diet of the native of the West Indies is only 0.32 per cent., while the corresponding part of the diet in temperate climates contains 2.23 per cent.; or an amount seven-fold greater. On this point, however, experience is probably to be trusted. Natives of hot countries, when they can afford it, generally use a small amount of fats as such—as the clarified butter of India, the salt pork of tropical America, the olive oil of the Mediterranean districts and the palm oil of equatorial Africa—and it is probable that a small quantity of this material, together with the protein and carbohydrates, assures a better use of the alimentary principles and reduces to a minimum the quantity of each which should be ingested. While it may, then, be conceded that a certain quantity of fatty food is a desirable component of the diet in warm climates, it is certainly true that the amount so taken should be relatively small, and that the proportion commonly maintained in temperate climates is far in excess of the needs of the organism in the tropics. This fact is demonstrated beyond the possibility of question by referring to the average dietary for men at hard work in the north temperate region and that for the corresponding class in the tropics, as given elsewhere; the fats and carbohydrates being seen to exist in the ratio of 1:5.5 in the cold climates, while in the tropical dietary, for men of the same weight, the relative proportion is 1:14. With such wide variation in the relation of these proximate principles, and in view of the fact that a considerable diminution in protein has also been shown to be desirable, it is evident that a sudden reduction of fat in the ration to the low standard of the tropical dietary might readily provoke such alteration of metabolic function and such interference with existing processes of digestion as would result in serious discomfort and positive detriment to the individual. The dietetic customs of a lifetime cannot be entirely changed in a day, and a stomach accustomed to rich and concentrated food would undoubtedly find difficulty in at once properly digesting a far more bulky and less nutritious diet composed chiefly of vegetable material. For the new comer in the tropics, habit as well as climate must be given consideration in the selection of diet; and it is therefore proba-

ble that no smaller proportion than that of one part of fats to ten of carbohydrates would be to the best interests of the United States soldier.

Carbohydrates and Carbon.—Carbohydrates are justly regarded as the chief source of carbon supplied to the organism in the production of energy. This, however, is due rather to the much greater quantity of carbohydrates ingested, as compared with the fat and protein constituents of the ordinary diet, than to a high proportion of this element in the carbohydrate itself—for the amount of carbon in starch and sugar is relatively low. Notter and Firth⁴² state that carbohydrate contains only 44 per cent. of carbon, where fat contains 76.5 per cent., and even protein contains 53 per cent. Through the considerable quantity of protein which enters into the diet it is evident that the latter plays no small part in determining the carbon intake, as utilized for the creation of energy. The urea of the urine practically represents the whole of the nitrogen which passes from the body, and in any given quantity of urea the amount of carbon is far less than that found in the quantity of protein containing the same amount of nitrogen. Foster³³ states that the percentage composition of the two is as follows:—

	Carbon.	Hydrogen.	Oxygen.	Nitrogen.	Sulphur.
Urea	25.00	6.66	26.67	46.67	—
Protein	53.	7.30	23.04	15.53	1.13

It is thus readily seen that 100 gm. of protein, which have been suggested as furnishing about the amount of nitrogen desirable for the daily allowance of the United States soldier in the tropics, contain as much nitrogen as 33.3 gm. of urea; but the 100 gm. of protein contain 46.4 gm. more carbon than do the 100 gm. of urea (53:6.66—or about the proportion of 8:1.) Hence the daily allowance of protein, for tropical service, in passing through the body and giving rise to urea, would leave behind 46.4 gm. of carbon to combine with oxygen and undergo elimination as carbon dioxide. It has been shown that the average diet of laboring men, at hard muscular work in the cooler portion of the temperate zone, contains 152 gm. of protein; and reduction in this respect to 100 gm., the proposed standard for

the tropics, implies a loss of 24.12 gm. of carbon previously available for purposes of energy. It is true that a certain amount of protein taken in as food, as shown by Mallet⁵⁰, is not directly decomposed to the comparatively simple forms of urea and carbon dioxide, but retaining a greater proportion of carbon, is excreted as creatinin or uric acid—bodies which, intermediate between protein and urea, form a series in which the proportion of nitrogen becomes larger and the carbon smaller—and it is probable that the amount of these substances is considerably increased in the tropics through the deficiency of oxygen available for the metabolic processes of the organism. In quantity, however, they are undoubtedly at all times so small as to be safely disregarded for the purposes of the present calculation.

As regards fats, as stated above, carbon enters into their composition to the amount of 76.5 per cent. ; and it has been shown that, for the tropics, the proportion of one part of fats to ten of carbohydrates in the dietary probably redounds to the best interests of the American soldier. On referring to the table giving the proximate composition of the average diets of hard-working men in the cooler portion of the temperate zone, it is seen that the amount of fats ingested by this class, 119.5 gm., would be reduced, according to the above proportion, to 66.6 gm.—or, in round numbers, to a daily allowance of about 65 gm. in hot climates. This amounts to a reduction of 54.5 gm. of fats and 41.69 gm. of carbon; making the loss in carbon, due to diminution in the fat and protein constituents, amount to 65.81 gm. daily. The average working diet for cool climates, just referred to, contains 453.39 gm. of carbon available for the maintenance of body-heat and the performance of external muscular work; this quantity, on subtracting the 65.81 gm. of this element withdrawn from the same diet through proposed reduction in fat and protein, being reduced to 387.58 gm. But it has been shown that the native of the tropics performs hard labor on a diet which, even when proportioned for an average weight of 145 lbs., yields only 319.16 gm. of carbon presumably available for purposes of energy. It is undoubtedly true that this relatively small amount of carbon required by the native of the tropics expresses to a considerable degree the

lessened amount of energy necessary in the maintenance of body-heat in hot climates; and hence approximation to the carbonaceous level of the native dietary would undoubtedly be desirable if the nutrient allowance for the soldier could be based upon requirements as to energy which, even if considerable, are at least fairly uniform. Unfortunately, however, for dietetic ideals—and undoubtedly, also, for the physical welfare of troops on duty in the tropics—a single fixed nutrient standard, as has already been advanced, must be determined with reference to the excessive requirements of infrequent emergency rather than by the ordinary conditions of military service. It has been stated that a greater part of the carbon oxidized within the organism is derived from carbohydrates; the latter being regarded purely as a force food and as the chief source of energy within the body. Carbohydratic material is capable of largely replacing fat in the dietary, diminishes nitrogenous metabolism, yields no end-products to be excreted by the kidneys, is readily assimilated and, when in excess, is largely stored up within the organism as glycogen and adipose tissue. The ingestion of carbohydrates, therefore, in quantities greater than are required for the immediate needs of the economy, while not without certain untoward effects upon the system, is undoubtedly far less inimical to health than where there is an excess of protein or fat in the dietary for the tropics. It is probable, therefore, that further reduction in carbon for the proposed tropical ration need not be great, as far as any seriously unfavorable effect upon the organism is concerned; considering at the same time that a certain carbonaceous excess in the tropical ration—as compared with native standards—may justly be regarded as a reserve of energy upon which the soldier may draw at such time as the routine duties of garrison are exchanged for the arduous labors of campaign. For this reason, it may be accepted, that the tropical ration should be capable of supplying about 380 gm. of carbon available for purposes of energy, not including the carbon required in the formation of urea. This quantity is yielded by the proximate principles of the subjacent dietary.

The Tropical Ration.—From what has been advanced it is seen that the proportionate composition and fuel value of the

proposed standard dietary for United States troops serving in the tropics, is as follows:—

Protein, gm.	Fats, gm.	Carbohydrates, gm.	Nitrogen, gm.	Total Carbon, gm.	Fuel Value, Calories.	Nutrient Ratio, Protein to Energy.
100	65	650	16.0	392	3491	1:8

The proximate alimentary principles, whose quantities and relative proportions are given in the above nutrient standard for the tropics, can be properly apportioned in the ideal ration for hot climates only as a result of an accurate knowledge of the percentage composition of such articles of food as may be selected to enter into its composition. The determination of these food-stuffs, for the American soldier, is an easy task. The present United States army ration, as already stated, is made up of admirably selected articles in more than sufficient variety; and it is therefore not only wholly unnecessary but quite inadvisable to consider, in this connection, any nutritive substances outside those articles legally established as components of the food for the United States soldier. The proximate composition of these has long since been determined—as given elsewhere—and hence the matter resolves itself into the simple problem of so proportioning the quantities of the nutrient articles already provided that, when brought together in varying combination, the resulting dietary will in each case approach the theoretical standards to a reasonable degree. It is not, however, intended that the daily intake of the several proximate principles shall exactly correspond with the quantities laid down therein, for this is manifestly impracticable for the military service, and, even if its accomplishment were secured it is more than doubtful if there would be any resulting advantage. The economy readily adapts itself, in the matter of food, to present necessity; and slight deficiency in any nutritive principle is readily made good, particularly in the matter of fats and carbohydrates, from the reserve of these materials stored up within the organism—small systemic losses being subsequently compensated for by corresponding excess. It is true, also, that the needs of the economy, as shown by appetite, are subject to wide variation; and hence it may be accepted that slight but carefully considered alteration in the constituents of the daily dietary, far from being

detrimental, is productive of actual benefit. It is obvious, also, that the soldier will require less nutriment in garrison than is necessary to furnish the energy for the greater labors of campaign, and hence the several components of the ration should be so proportioned as to furnish dietaries properly varying in potential and nitrogenous value. It is believed that this is accomplished in the following modifications of the dietaries already shown to be most commonly used by the United States soldier in temperate climates; the subjoined table showing the nutrient value of a proposed dietary for the tropics containing the greatest amount of food material which might be drawn by the soldier.

TROPICAL DIETARY. I.

ARTICLES.	Quantity, oz.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel value Calories.
Fresh beef	10	44.75	—	41.68	6.67	590
Flour	18	5.60	380.46	55.08	7.90	1850
Beans	2.4	1.22	40.18	15.16	2.42	240
Potatoes	16.0	0.45	81.70	9.50	1.52	380
Dried Fruit	3.0	1.53	33.80	1.77	0.27	220
Sugar	3.5	—	94.25	—	—	397
Total	52.9	53.55	630.39	123.19	18.78	3677

Total carbon, 395.14 gm. Nitrogen to carbon 1:19.6.

The following table shows a proposed dietary for the tropics, especially applicable to field service, in which the fatty constituents attain their maximum and the potential energy is high.

TROPICAL DIETARY. II.

ARTICLES.	Quantity, oz.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel value Calories.
Bacon	6	105.66	—	15.64	2.49	1042
Hard Bread	18	6.63	371.81	73.12	11.74	1926
Beans	2.4	1.22	40.18	15.16	2.42	240
Dried fruit	3.0	1.53	50.70	1.77	0.27	220
Sugar	3.5	—	94.25	—	—	397
Total	32.9	114.44	556.94	105.69	16.92	3825

Total carbon, 328.76 gm. Nitrogen to carbon, 1:23.

The nutrient value of the ordinary dietary as proposed for garrison duty in the tropics is as follows :—

TROPICAL DIETARY III.

ARTICLES.	Quantity, oz.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
Fresh Beef	10	44.75	—	41.68	6.67	590
Soft Bread	20	6.80	299.20	53.83	8.61	1506
Potatoes and On- ions	16	0.72	73.09	8.60	1.40	340
Dried Fruit	3	1.53	50.70	1.77	0.27	220
Sugar	3.5	—	94.25	—	—	397
Total	52.5	53.80	517.24	105.88	16.95	3053

Total carbon, 328.76 gm. Nitrogen to carbon, 1:18.

For the following combination the several articles of the ration most closely approaching in character to the food materials used by natives of the tropics—proportioned in quantity according to the standard proposed for hot climates—have been selected.

TROPICAL DIETARY IV.

ARTICLES.	Quantity, oz.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
Fresh Fish (cod) whole	14	0.79	—	31.73	5.07	120
Soft Bread	20	6.80	299.20	53.83	8.61	1506
Rice	4	0.45	88.87	8.75	1.40	407
Potatoes and To- matoes	16	0.54	65.80	8.17	1.36	297
Dried Fruit	3	1.53	50.70	1.77	0.27	220
Sugar	3.5	—	94.25	—	—	341
Total	64.5	10.11	598.82	104.25	16.71	2947

Total carbon, 327.50 gm. Nitrogen to carbon, 1:19.6.

On averaging these four dietaries, as furnished by the ration proposed for the tropics, the mean nutrient composition is seen to be as follows :—

DIETARY.	Quantity in ounces.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
No. I	52.9	53.55	630.39	123.19	18.78	3677
No. II	32.9	114.44	556.94	105.69	16.92	3825
No. III	52.5	53.80	517.24	105.88	16.95	3053
No. IV	64.5	10.11	598.82	104.25	16.71	2947
Average	50.7	57.97	560.85	109.06	17.34	3375

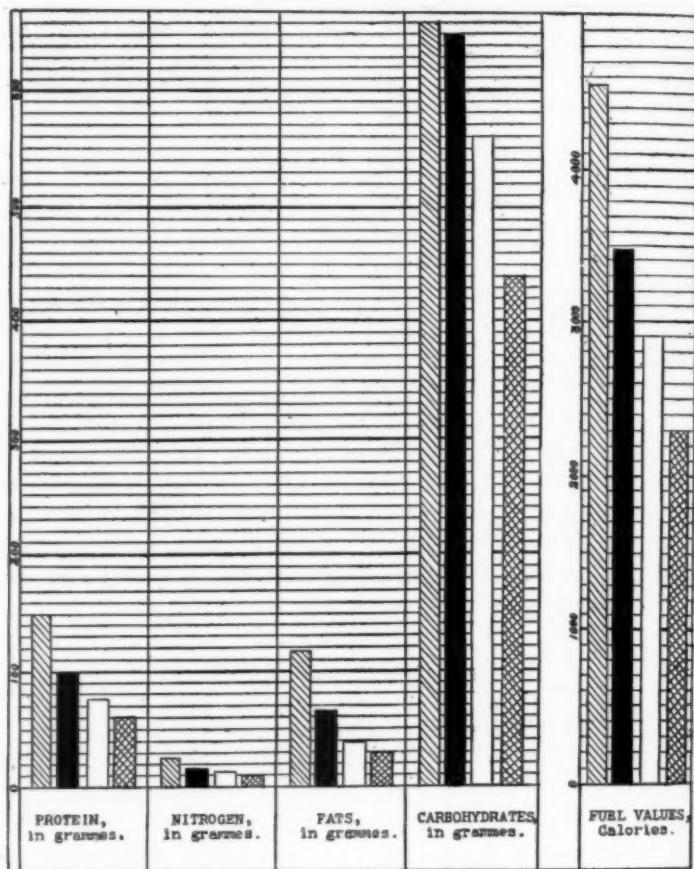
Total carbon, 350.00 gm. Nitrogen to carbon, 1:20.





It will be observed that while the above dietaries differ considerably among themselves, yet when averaged together in equal proportions they do not greatly vary from the nutritive standard for the tropics already proposed—and this is an additional reason why a selection of the same articles of the ration should not be made from day to day. It is seen that the above average dietary, as compared with the nutrient standard, is still slightly deficient in fats and fuel value and a trifle in excess as regards protein. These defects, if they may be considered as such, are, however, readily corrected by a rotation of dietaries, in which dietary II is used twice where dietaries I, III and IV are each employed but once. The results of this change are as follows:—

DIETARY.	Quantity in ounces.	Fats, gm.	Carbo- hydrates, gm.	Protein, gm.	Nitrogen, gm.	Fuel Value, Calories.
No. I	52.9	53.55	630.39	123.19	18.78	3677
No. II	32.9	114.44	556.94	105.69	16.92	3825
No. II	32.9	114.44	556.94	105.69	16.92	3825
No. III	52.5	53.80	517.24	105.88	16.95	3053
No. IV	64.5	10.11	598.92	104.25	16.71	2947
Average	47.1	69.43	572.06	107.38	17.26	3465

Total carbon, 363.33 gm. Nitrogen to carbon, 1:21.

From the above tables, it is evident that such changes as are advisable in the adaptation of the United States army ration to tropical conditions are chiefly in the line of a reduction in quantity of the foods at present provided by a too generous government. It is true that the sugars and starches should be slightly augmented, but their increase is small when compared with the considerable reduction of nitrogenous and fatty material which is proposed. Many of the components of the present ration, as is seen by the following table, require no change in the consideration of the tropical dietary, being not only admirably selected but also properly proportioned.



1.  Standard dietary as given by typical dietaries of men at hard labor in the northern portion of the temperate zone.
2.  Standard dietary as given by proposed U. S. Army ration for tropical service.
3.  Standard dietary for native laborers in the tropics; based on the weight of 145 lbs. for purposes of comparison.
4.  Standard dietary of the laboring class of natives in the tropics (Java, British India, Guadeloupe, Abyssinia), as determined from the food actually consumed by them at normal body weights.

The ideal ration for an army of United States soldiers on duty in the tropics is therefore suggested as being of the following composition :—

ARTICLES.	Quantity per ration (ounces)	Protein, gm.	Nitrogen, gm.	Fats, gm.	Carbohydrates, gm.	Fuel Value, Calories.
Fresh Beef (Quarters)	10.0	41.68	6.67	44.75	—	590
or Fresh Mutton	10.0	46.20	7.35	62.90	—	720
or Pork	6.0	27.54	4.40	112.54	—	1093
or Bacon	6.0	15.64	2.49	105.06	—	1042
or Salt Beef	10.0	40.27	6.44	64.68	—	688
or Dried Fish (cod)	10.0	45.37	7.26	1.13	—	197
or Fresh Fish, average (whole)	14.0	31.73	5.07	0.79	—	120
Flour	18.00	55.08	7.90	5.60	380.46	1850
or Soft Bread	20.00	53.83	8.61	6.80	299.20	1506
or Hard Bread	18.00	73.12	11.74	6.63	371.81	1926
or Corn Meal	20.00	50.40	7.99	12.40	425.80	1986
Beans	2.4	15.16	2.42	1.22	40.18	240
or Peas	2.4	16.38	2.62	0.75	41.80	246
or Rice	4.0	8.75	1.40	0.45	88.87	407
or Hominy	4.0	9.20	1.47	0.67	88.75	430
Potatoes	16.0	9.50	1.52	0.45	81.70	380
or Potatoes 80% and Onions 20%	16.0	8.60	1.40	0.72	73.09	340
or Potatoes 70% and Canned Tomatoes 30%	16.0	8.17	1.36	0.54	65.80	297
Dried Fruit (average)	3.0	1.77	0.27	1.53	35.80	220
Sugar	3.5	—	—	—	94.25	397
or Molasses	1 gill	—	—	—	56.05	269
or Cane Syrup	1 gill	—	—	—	56.25	269
Coffee, green	1 $\frac{1}{8}$	—	—	—	—	—
or Coffee, roasted	1 $\frac{1}{8}$	—	—	—	—	—
or Tea, green or black	1 $\frac{1}{8}$	—	—	—	—	—
Vinegar	1 $\frac{1}{8}$ gill	—	—	—	—	—
Salt	1 $\frac{1}{8}$ oz.	—	—	—	—	—
Pepper, black	1 $\frac{1}{8}$ oz.	—	—	—	—	—
Soap	1 $\frac{1}{8}$	—	—	—	—	—
Candles	1 $\frac{1}{8}$	—	—	—	—	—

REFERENCES.

1. Rattray. On some of the more important physiological changes induced in the human economy by change of climate, as from temperate to tropical and the reverse. Proceedings of the Royal Society of London, Vol. 18, 1869-1870.
2. Maurel. Les Guyanes. Art. Dictionnaire Encyclopédique, Déchambre.
3. Jousset. De l'acclimatement et de l'acclimatation. Paris, 1884.
4. Fayer. On the preservation of health in India. London, 1894.
5. Rattray. On the dieting of seamen. Statistical report of the health of the British Navy. London, 1869.
6. Cullimore. Tropical and subtropical climates and the acclimatization of the fair races in hot countries. Medical Press and Circular. London, 1888.
7. Vierordt and Ludwig. Quoted by Foster²², Notter and Firth²³, and others.
8. Parkes. Manual of practical hygiene for the Army Medical Service. Philadelphia, 1868.
9. Fonssagrives. Traité d'hygiène navale. Paris, 1877.

10. Hill. The disorders of digestion incident to a hot climate. The Australian Medical Gazette, February 20, 1896.
11. Mourson. Quoted by Roquemaure, Hygiène alimentaire aux pays chauds. Bordeaux, 1895.
12. Eijkman. Virchow's Archives. 131, 1893.
13. Moore. Tropical Dietetics. The Medical Magazine, London, October, 1894.
14. Nielly. Hygiène des Européens dans les climats Tropicaux, 1884.
15. Atwater. Foods for man. Year book of Dept. of Agriculture, 1897.
16. Playfair. Chemical News. XI, 1865.
17. Hultgren and Landergren. Untersuchung über die Ernährung schwedischer Arbeiter. Stockholm, 1891.
18. Erismann. Archiv für Hygiene. 1889. 9.
19. Prausnitz. Archiv für Hygiene. 1892. 15.
20. Ohlmüller. Zeitschrift für Biologie. 1884.
21. Atwater. Bulletin No. 38. Department of Agriculture, 1897.
22. Atwater. Bulletin No. 21. Department of Agriculture, 1895.
23. Manfredi. Archiv für Hygiene, 1893. 17.
24. Moleschott. Razione del Soldato Italiano. Rome, 1883.
25. Eijkman. Zeitschrift für Biologie. 1889.
26. Goss. Nutrition investigations in New Mexico. Bulletin No. 64. Department of Agriculture, 1896.
27. Atwater and Woods. The food of the negro in Alabama. Bulletin No. 38. Department of Agriculture, 1897.
28. Church. The food-grains of India. London, 1886.
29. Eijkman. Virchow's Archives. 133.
30. Lapique. Étude quantitative sur le régime alimentaire des Abyssins. Comptes Rendus Hebdomadaires des séances et mémoires de la Société de Biologie. 9. ser. 5. 1893.
31. Frissell and Bevier. Dietary studies of negroes in Virginia. Bulletin No. 71. Department of Agriculture, 1899.
32. Atwater and Bryant. The chemical composition of American food materials. Bulletin No. 28, revised edition. Department of Agriculture, 1899.
33. Foster. A Text-book of Physiology. London, 1890.
34. Krukenberg. Separat-Abdruck a.d. Sitzungsberichte der Jena'sche Gesellschaft für Med. und Naturwissensch. 1885.
35. Pavy. The physiology of the carbohydrates. London, 1894.
36. Schuetzenberger. Bulletin de la Société Chimique de Paris, Vol. XXIII.
37. Cohnheim. Vorlesungen über allgemeine Pathologie.
38. Seegen. Quoted in Landois' "Physiologie."
39. Külz. Archiv. f. exper. Path. und Pharm. Vol. VI.
40. Mering. Zeitschrift f. prak. Med. 36, 1872.
41. Gayet. Guide sanitaire a l'usage des officiers et chefs de detachements de l'armée coloniale. Paris, 1897.
42. Notter and Firth. Theory and Practice of Hygiene. Philadelphia, 1896.
43. Communication to the writer. Department of Agriculture. January 16, 1900.
44. Rochard. Dictionnaire Encyclopédique.
45. Maurel. Communication au Congrès médicale de Blois, 1884.
46. Treille. De l'acclimatement des Européens dans les pays chauds. 1888.
47. The Journal of Tropical Medicine. March, 1899.
48. Rubner. Zeitschrift für Biologie. 19. 1883, and Lehrbuch der Hygiene, Leipzig, 1889.
49. Cardwell. Report on the Sanitary history of the 2d Division, 8th Army Corps. Report of the Surgeon General of the Army, 1899.
50. Mallet. The physiological effect of creatin and creatinin and their value as nutrients. Bulletin No. 66. Department of Agriculture, 1899.

MILITARY NEWS AND CRITICISM DURING THE PROGRESS OF A CAMPAIGN.

BY MAJOR JAMES CHESTER, U. S. A. (RETIRED).

THERE is an old custom which ought to be a rule, although it has never been generally accepted by the critics, that a work should never be criticised until it is finished. So far as the fine arts are concerned, the rule or custom is fairly well observed, not because the critics recognize its propriety, but because the work is hidden from their view. Veiled in the study or the studio the work awaits the finishing touches. When these have been given and the artist considers it complete, the veil is withdrawn and criticism is invited. The artist is willing to be judged by his finished work. Earlier criticisms are merely judgments in advance of probably important evidence, and should have no standing in the forum of public opinion.

But there are some works deserving to be classified as works of art, which cannot be concealed during construction. They may have been conceived and elaborated in secret, in the mind and in the study of the artist, but they must be constructed out of doors. And their construction requires time. Slowly the ideas of the artist materialize before a watching world. Some of the watchers may be able to grasp and appreciate the idea in the earlier stages of its development, but the great majority of them cannot. The appreciative watchers are silent spectators. They see ; they understand ; they admire ; but they say nothing. The unappreciative watchers think they see and believe they understand ; but they are mistaken. Their ideas and those of the artist do not harmonize, consequently what they consider faults and flaws in the work are numerous and glaring, and they cannot hold their tongues. They criticise and condemn the artist for ideas that he never entertained or tried to embody in the work. Such criticism is unjust and annoying, and in some cases almost criminal. Unfortunately in a free country it cannot be stopped.

A military campaign is a work of art which may be conceived and elaborated in secret, but must be executed out of doors. It is a great work. Compared with it the cathedrals of Milan and St. Peter's sink into insignificance. It is perfected in the mind of the artist, in outline and in minutest detail, with as much care, and skill, and mental effort, as ever were devoted to the best specimens of architectural art. And the plan must provide for peculiar conditions. It has to be constructed in the immediate presence of a powerful enemy who is determined to prevent its completion.

Thus the military artist has a problem to solve so handicapped as to be without parallel in any other department of art. A problem which the average layman cannot understand. He rarely sees any of the greatest difficulties of the campaign. To him it is simply a contest in killing and the tactics of Donnybrook should be sufficient for the solution of its problems. The logistics of the campaign; the questions of supply; the service of security and information; and all the other adjuncts to the military machine, find no place in the problem as he sees it. He may admit that the General-in-chief should know all about the theatre of operations; that he should have diagnosed his adversary's intentions, hopes and fears, and the strength and disposition of his army; but how or when he acquires all this information receives no consideration. He seems to think the general ought to know it all instinctively, and if he does not he is a failure.

In free democratic countries during war, the daily press, which has more liberty than is good for itself or the people whom it professes to serve, is simply an extra adversary to be watched and controlled; and if there is a possibility that its news may fall into the hands of the enemy to be deceived and deluded. Deceiving the enemy has always been an important branch of the military art and the time has come when the friendly press must be utilized for that purpose. To accomplish the desired end effectively, the press itself must be deceived. This will require the creation of a secret military staff in the not distant future separate and distinct from what is now known as "The Secret Service."

Deceit, that is deceiving an enemy, is not a new element in

the art of war. It has existed from time immemorial. The ablest commanders have always been artistic deceivers. Napoleon's success in the campaign of Marengo was due to a falsehood. And the falsehood was so artistically compounded of strong probability and a downright lie, that Napoleon himself is credited with its authorship.

The situation which called forth the falsehood was peculiar. Napoleon's magnificent strategy had completely deceived Melas. He had forced the line of the Ticino before his presence in Italy had been discovered. He was now in a position to cut the Austrian communications, but he was not strong enough to attempt it until Moncey's Division joined him from Moreau's army. If Melas could be kept quiet until that junction was effected all would be well. But Melas would not remain quiet. He was angry at being outwitted by one whom he was pleased to call a stripling, and he started his army in the very direction that meant destruction to Napoleon's army. That movement had to be stopped by other than military means. Hence the false report.

The report which Melas received from two different and independent sources, was, "Kray has been defeated on the Danube, and Moncey's corps has arrived on the Ticino." (I quote from memory.) Now the first part of that report was true, but nobody in Italy knew it at that time. Still it was a strong probability, and it had been troubling the mind of Melas for some time. The second part was false, and yet it was a likelihood. If Kray was defeated part of Moreau's army would, no doubt, be sent into Italy, and if Moncey had arrived others might be approaching. Discretion counselled Melas to recall his columns, and concentrate for a grand struggle. Napoleon's army was saved from disaster.

One need not stop to consider what effect the electric telegraph and the daily newspaper would have had on that campaign. The defeat of Kray would have been known within an hour of its accomplishment, and the day and date of Moncey's departure for Italy would have appeared in every daily paper south of the Alps.

The suppression of military news has always been a necessity during a campaign. Newsmongers have always been

nuisances in an army on active service. The daily press has only intensified it. No doubt it means to publish only facts; but facts should not be published until "The hurly burly's done." If, as an illustration, one may compare big things with little, how would a whist player's game be affected if the spectators behind him were audibly to inform each other, and therefore his adversaries, what cards he held and which of them he ought to play? And that is exactly what the newspapers do, or try to do, during a war; and as they cannot be suppressed in a free country, they ought to be deceived. If they could be deceived they might be made very useful instruments. But the deception must be genuine. Few men can clothe a falsehood in the garments of Truth, unless they actually believe that it is true.

The old soldiers of our Civil War have never forgotten the "enterprise" of our newspapers during that war. Perhaps they are unduly sensitive on the subject. But they honestly believe, that is, those of them who held responsible positions do, that many of our failures were due to information which the enemy gleaned from the columns of our newspapers. And they never doubted that a reporter would sacrifice a military manœuvre if he could thereby score a newspaper success. And yet the reporters were loyal men and friendly to the cause which they unconsciously handicapped. They did their best to get the facts, and were most dangerous when most successful. What could a commander do in the way of strategy, when surrounded by such men? Absolutely nothing in a civil war. In a foreign war he might resort to censorship.

The Censor is a necessity in every campaign. But the functions of a Censor are purely negative. To make him a positive power he should have secret assistants. The Censor can only suppress. He should be assisted by somebody who could create. The Censor's assistant should be an artist—a genius in fact. His functions would be to stuff the reporters with artistic lies. The General-in-chief would indicate what he wished to have believed, and the Censor's assistant would set the trap for the newspaper men. No blunderer could fill that position. The strategic items should be carefully concealed. If there happened to be a leaky vessel inside some staff officer's uniform, he might be told some of them as great secrets, not to be di-

vulged to any one. Papers containing the great secrets might be inadvertently left within reach of other leaky vessels, just for a moment. A genius would no doubt discover a hundred ways to the attainment of his purpose, the point being that every link in the chain that leads to the newspaper man must be deceived. Items gathered in that way, by cheek, cunning and perseverance, and possibly friendship with the last link in the chain, would certainly be believed, and would be likely to leave the reporter's hand clothed in all the habiliments of truth.

But newspaper news is less dangerous than newspaper criticism published during the progress of a campaign. There are many reasons for this, not the least of which is the fact that news items as they generally appear are often inconsistent and sometimes contradictory. Such defects affect their credibility. They are therefore less valuable in the raw state than when they are sifted, supplemented, and arranged by a competent critic, who can read between the lines. When thus treated they assume a plausibility, and become credible, even if untrue. A professional critic can marshal the evidence in a very convincing way. Taking the published official reports as the outline of his picture, he fills in the details and shading from press reports and the facts which he believes he sees between the lines. The result is a caricature perhaps, false it may be in every feature, and yet conveying an idea of the situation, which helps the hostile strategist in his diagnosis. Such caricatures may mislead the people, disturb the government and annoy the commander criticised, but they rarely deceive the enemy. He has in the reports of spies and reconnoissances an outline to work upon, more complete and almost as reliable as the published official reports, and so he can correct and amend the critic's caricature until it becomes a veritable picture. He might be able to reach the same results from the news items; but the critic saves him a heap of hard work.

Published criticisms of current campaigns therefore are not only unprofitable but dangerous, no matter how sound they may be. They are criticisms of unfinished work; they are based upon unreliable data; they serve no good purpose; and they may do much harm. When the campaign is over, when the work is finished, criticisms may be profitably published. The

lessons of the campaign are then to be learned. Its blunders and blemishes can then be discussed without danger ; but not till then.

But the idea of muzzling the press in a free country is rather utopian. A military campaign is so intensely interesting that critics and reporters cannot let it alone. They are attracted to an army on active service as buzzards are attracted to a carcass in the wilderness. It was said that our little expedition to Santiago carried with it eighty-four newspaper men. And yet the picture of the operations of that campaign which they laid before the public was very imperfect. The trouble was, no newspaper man saw the whole thing, and probably misunderstood much that he saw. Such reports must be misleading. They have to be edited before they have any real value. There is a great difference between what one sees and knows to be true, and what he merely hears and believes. The first operation of the military critic therefore is, to reduce the press reports to their lowest terms. Only what the reporter says he saw should receive consideration, and even that should be rejected if clouded by stronger conflicting statements. When all have been edited and arranged, the outline deduced from published official reports can be filled in, and a picture or caricature results which can convey an idea more or less true of the operations of the campaign. Fortunately the campaign of Santiago, was so short, and the result so satisfactory, that critics were discouraged or at best found inattentive listeners.

The campaign in the Philippines has escaped professional criticism, not because it has been short or successful, but because it is difficult to understand. The published official reports could hardly be tortured into the outline of any plan of campaign, and the censored press reports were too meagre and uncertain to furnish details and shading. If one were forced to give an opinion from available data, he would probably say "The war in the Philippines seems to be a contest in killing, and more like a grand hunt than a military campaign."

But the war in South Africa has given the critics a fine field of operation, and they have occupied it with such avidity that one feels inclined to believe that most of them have been actuated by motives more powerful than professional zeal. In

Great Britain and in this country, politics and ancient animosities taint many of the criticisms, while envy and hatred are visible in many of the criticisms of Continental Europe.

If the importance of the war in South Africa is to be measured by the attention it receives from all departments of the press, it must be rated as a first class struggle. Literary reviews and magazines; professional papers and periodicals; and the weekly and daily press, have all devoted much space to the subject. It has been treated in every conceivable way, by critics of all kinds and calibres, and sometimes with astonishing results. In the daily press most of the critics seem to be governed by sentiment. They are pro-Boer or pro-British, and their partisanship not only affects their judgment, but colors the evidence upon which it is based. Such criticism is unprofitable. It can do no good. It can do no harm. It is simply amusing.

Passing from the daily to the periodical press we encounter criticisms of a higher order. Some of them seem to be professional; few of them are impartial, and most of them are tainted with sentiment. On reading them one cannot help wondering at the many meanings that can be deduced from the same statements of fact. One writer in an English review is decidedly amusing. He has discovered that the Boer tactics have been copied from those of "Stonewall" Jackson. He believes that Joubert served under that distinguished commander and learned his methods. Hence his success in South Africa. Some Americans who are fairly familiar with Jackson's tactics, from experience as well as study, will find some difficulty in sorting out the similarity.

It is a remarkable fact that some critics can see anything that their heart desires in any piece of evidence, and this critic has a simple way of reaching his conclusions. He quietly assumes that success is the distinguishing characteristic of Jackson's tactics. The rest is easy. Traces of the tactics can, of course, be found on every battle-field. It is doubtful however if the assumption will be very generally accepted.

When such opinions are honestly held by anyone on such evidence, a problem in psychology is presented worthy of serious consideration. One cannot help asking himself: How

could he have reached such conclusions? And the only satisfactory answer is, he must have begun his study of the art of war at "Stonewall" Jackson's campaigns. When that answer has been satisfactorily assimilated one is not surprised when he finds the critic attributing to Jackson maxims of war that were old in the days of Napoleon. Hero worship is admirable enough, and the worshipper should be allowed large latitude. Still it is unfair for him to adorn his hero with decorations that belong to another.

What confirms the theory that the military studies of this critic began at Jackson's campaigns, is his opinions of British tactics. Of course there is nothing Jacksonian about them. The dashing assaults of Glencoe and Elandslaagte, are discreditable in his eyes. They are imitations, he says, of the mad if magnificent attacks of Fuzzy Wuzzy, from whom, he thinks, they have been learned. He never could have heard of the storming of Badajos, or the battle of Fontenoy, or Crecy, or Poitiers.

But the most startling assertion in the whole article perhaps, is one about the Franco-Prussian War. He says that the experience of that war should have taught British officers that the assault of intrenched infantry is impracticable. One cannot help thinking that he must have carelessly read the history of that war. As a matter of fact that history contains descriptions of many successful frontal attacks on well fortified and strongly held positions.

The Rotherberg was certainly as capable of defense as any kopje in South Africa, and it was well intrenched and strongly occupied by infantry and artillery. Let us take a look at it for a moment.

Standing on the Galgenberg south of Saarbrücken, and looking in a southerly direction we see on our left front and perhaps 1200 yards away a beetling cliff of red sandstone 200 feet high, jutting out into the valley like a bastion. This is the Rotherberg, easily recognizable as the military key to the valley traversed by the international road. It is a peculiar formation weathered into a peculiar shape. Its northern face is almost perpendicular, and its greatest height is at the salient which points towards the north. From the salient the surface

of the rock descends in a gentle slope, narrowing gradually to the neck where it joins itself to the heights of Spicheren.

If nature had been guided in her work by a military engineer, she could not have carved out a more formidable bastion. And yet the Rotherberg was taken by assault on the salient, the assaulting column consisting of a battalion of infantry.

But the capture of the Rotherberg was not the only incident in that day's work which taught the same lesson. There were the Golden Bremm and the Baraque Mouton, strong outposts, carefully prepared for defense and well garrisoned. Let us look at them for a moment. Let us take our stand within the German lines once more on the Galgenberg. We can see the international highway crossing the valley diagonally until it strikes the woods which skirt the heights of Spicheren. Thence it runs parallel to the timber, and within easy rifle shot, to the Golden Bremm. The woods were occupied by French infantry. We can see the Golden Bremm on the left of the road and also the Baraque Mouton 400 yards further on, on the right of the road.

The Golden Bremm was 1800 yards from the Galgenberg, from which the attacking column started, and every foot of the way was within effective range of the French batteries on the heights of Spicheren, and the last 600 yards of the way was exposed to a flanking infantry fire from the woods already mentioned.

But what kind of a place is the Golden Bremm? Well, it is a veritable Hougomont. It is a tavern, and consists of two substantial stone buildings inside a roomy yard enclosed by a solid wall of masonry eight feet high, all of which had been thoroughly prepared for defense.

Passing the Golden Bremm we observe on the right of the road and about 400 yards farther on, another cluster of buildings. This consists of a farm house, a granary and outhouses, and is known as the Baraque Mouton. The buildings are all substantial stone structures and properly prepared for defense. The group stands in excellent defensive relations with the Golden Bremm, flanking it and being flanked by it in an admirable if accidental manner. Moreover, if the buildings of the Baraque Mouton had been specially constructed for defense,

they could not have been better placed. They are in perfect defensive relations to each other.

Each of these outposts was occupied by a battalion of French infantry, and the Golden Bremm had a second battalion in reserve within supporting distance.

These formidable outposts were attacked by two battalions of German infantry advancing from the Galgenberg, and assisted by two additional companies as skirmishers. The battalions were operated as a unit until they arrived abreast of the Golden Bremm, when the left battalion assaulted and carried that post, and the right launched itself successfully against the Baraque Mouton.

It is hardly fair then to say that the lessons of the Franco-Prussian War are against the assault of naturally or artificially strong positions held by good infantry troops. The positions described were quite as formidable as anything in South Africa, and their successful assault justified British commanders in utilizing the dash for which their infantry has been celebrated long before they ever heard of Fuzzy Wuzzy. That they frequently failed is accounted for by new elements which have been introduced into the art of war since the campaigns of 1870-71. In comparing military operations of to-day with those of 1870, these new elements must not be overlooked.

Maxim guns and magazine rifles are now considered indispensable instruments of destruction in every army, and cannon and their projectiles have been immensely improved in range and deadly effect. Whether these inventions have changed the equation of attack and defense, is, perhaps, an open question. But there is one new element which unquestionably has helped the defense. Maxim guns and magazine rifles are important elements in the new problem; but they are not revolutionary. Many kopjes have been carried in spite of them, at enhanced cost no doubt. Assault is now very difficult but not impossible. Intrenched positions properly prepared by artillery fire can still be carried by infantry assault. But the artillery preparation must be effective. Has anything occurred to make that difficult or even impossible? South Africa seems to say, "Smokeless powder does it."

Artillery preparation of a position for infantry attack pre-

supposes artillery knowledge of the position. The whole country side cannot be shelled effectively. Shelling the woods was never a profitable business, and smokeless powder has forced the artillery to practice it. An enemy using smokeless powder gives no indication of his position. Even his artillery can be worked to its limits without disclosing itself. There may be, indeed there always are, intrenchments and redoubts; but is there any certainty that there is an enemy in them? Prominent intrenchments may be dummies intended to attract the enemy's fire. The hostile line of battle may be hidden in the brush, or behind some natural cover where there is nothing to indicate its presence. A line so ensconced can laugh at the Lyddite shells bursting in their bogus defenses, and be ready to open a withering fire from an unexpected direction upon any assault that may be attempted. Smokeless powder has added a new maxim to the art of war. Since its advent concealment is better than cover.

Of course concealed guns and concealed infantry are liable to be discovered. Then the hiding hole becomes a trap, a slaughter pen, and should not be defended. It is better to move. The long range of the modern rifle makes such movements possible. Indeed, smokeless powder seems to have converted the tactics of battle into a game of hide and seek in which the hider always has the advantage.

With the "Hide and Seek" feature in his mind's eye, one begins to understand the performances of the British as well as the Boer side. One gets a better idea of what the Boers are trying to do, and what the British are trying to find out.

But I am drifting into that which I started to condemn, and as this paper has reached the customary dimensions it will be well to postpone further remarks to some future opportunity.

OUR TROOPS IN THE TROPICS—FROM THE SURGEON'S STANDPOINT.*

BY J. HAMILTON STONE, 1ST LIEUT. AND ASST. SURGEON, U. S. A.

THE pacification of Cuba and the establishing of a free and stable form of government for a people whose proximity and common interests so closely allied them with our own, when these momentous results shall have been brought about, will be neither the sole nor the most important advantages gained by the victory of American arms during the war with Spain.

Sanitary improvements, which, of course, are expected as natural concomitants with American occupation and control, and which are now rapidly progressing will, in their full fruition, constitute the greatest achievement of importance to Cuba, America, and the whole world.

And the future of "the gem of the Antilles" will largely depend upon the fact of its healthfulness, as opposed to the conditions under Spanish rule, when Cuba was a veritable pest-hole, a breeding place for some of the most deadly of epidemic diseases.

Our Southern States have heretofore been kept in constant fear and dread and have at frequent intervals been invaded by the scourges of yellow fever and small-pox, transported from this nearby island. During the last two hundred years yellow fever has been introduced and spread in the United States eighty times; the history of which epidemics has shown dreadful mortality and immense loss owing to the depressing and even paralyzing effect to all manner of commerce, trade, and industry.

During one year of American occupation there has been sufficient improvement and progress in sanitary matters to fur-

*This essay was forwarded, under existing regulations, to the Headquarters, Department of Matanzas and Santa Clara, and is published by the authority of the Department Commander. The author alone is responsible for the views set forth in his paper.

nish an example which not only startles the intelligent world but has been unequalled in human annals.

As to the results so far-reaching in their beneficence, and whatever of protection and of health and comfort are in after years derived from these innovations, the glory and merit of it all justly belongs and of right should accrue to the American army of occupation.

Through this metamorphosis, by the continuation of the benign effects of which, I truly believe, in the irony of fate Cuba will eventually be transformed into a paradise of health, wealth and beauty, the unit of force, if not of executive ability, the "man behind the gun," if you please, has had much to contend with, and will have, at its successful termination, many reasons to congratulate himself, if he has survived the execution of the exacting duties which have rightly or otherwise fallen to his lot.

A consideration of the climatic and disease conditions of the tropics with especial reference to Cuba and the manner in which our troops have combatted the conditions or brought themselves into natural and healthful relationship with their new environments will occupy me, and I will leave to my hearers to answer whether or not the capital and commercial wealth which will harvest the fruits of their labors will ever pause in their mad strife for Cæsal supremacy to place wreaths of gratitude and remembrance upon the graves of those who fought, worked, suffered disease, and died for the pacification and sanitation of Cuba.

The embarkation of the 5th Army Corps from Tampa in June, 1898, destined as it was for tropical shores, was indeed "a new departure" in more ways than one, and the memorable Santiago campaign was an instructive example of what will happen to an army when from necessity, or other reasons, all well-established rules of hygiene are thrown to the winds, when the advice and recommendations of those who are professionally trained in such matters are either not requested or else utterly disregarded, and when medical and hospital supplies and the necessary transportation for these are considered as unnecessary impedimenta. The consequence of all this has been told in mournful numbers, and if the troops had not been re-

turned to the tropics under more favorable conditions, the results of the campaign from a sanitary standpoint with the horrors of Montauk as a grand finale, would have been a sad commentary upon such matters.

The period of peaceful occupation, however, has thrown a flood of light on the gloomy retrospect and brings in bold relief by contrast, and emblazons for the edification of other peoples and all times the example of what may be accomplished when the tenets of a true science properly applied are given a fair chance to work out their beneficent results.

A most important consideration relative to our sojourn in the torrid zone is that of acclimatization. Have our troops after a year's service become to any considerable extent acclimated? What is acclimatization and how far-reaching is it in its protective influence? Curtly put—it is the beneficial physiological adjusting of the human organism to climatic and hygienic conditions of a new physical environment. To what extent this may be carried depends upon many things, not the least of which, of course, is the range of difference between the old conditions and the new. Although the physiological activities of man are marvellously attuned by custom and habit to the meteorological conditions of external nature, the so-called protective influence of continued combat with unaccustomed forces due to any considerable length of residence in a new locality are very much over-rated and are doubtless in many cases not only not protective but even predisposing. To a great number of tropical diseases there is no immunity *per se*. This is notably so with malaria. As for the few to which the natives seem to be immune it is due to the fact that they have either had the disease in mild form during childhood or else it is a natural immunity—inherited from immune ancestors; but it is not believed that residence alone for any length of time will confer this blessing. Those ailments which are directly due to extreme conditions of the climate are better withstood by long residence, but those which are caused by the lower order of parasites, bacterial, protozoal and others, are not less liable, but indeed more so by continued exposure to such causes. Of course, consideration must be given to the fact that if a person has been subjected to the chances of infection of endemic

diseases for a long while without having acquired them it is presumptive evidence that he possesses an immunity; but this is not certain, because it may simply be due to the fact of avoidance when seemingly most exposed. So we are not justified in placing very much importance on the ability to better withstand the inroads of tropical diseases because of a year or more of residence here. If the constitution of the individual has successfully resisted the new conditions—a continuance will in all probability tend to strengthen the ability to bear and resist, but if, on the contrary, the system has been weakened in any way by the climatic or other circumstances, it is reasonable to conclude that naught but harm can result from a continuance of the baneful influences. When increased labors are thrown on certain organs, they are overtaxed and prone to disease. If nature in her marvellous adaptability is able to meet the new demands, the health balance will be maintained; if not, failure of strength will follow, *pari passu*, with a continuance of the causes.

Our soldiers, with the activity of mind and body so characteristic of inhabitants of the temperate zone in general and of such an intelligent and energetic people as Americans in particular, coming to a locality where the moulding influence of the ages with its accumulative tendencies has impressed indolence and apathy and inactivity upon the inhabitants as a *sine qua non* for their very existence and well-being, we can readily see, will suffer, except in the happiest chance, or under the most skilled efforts for their protection and preservation. So, indeed, long continued occupation, while conducive to the health of the fortunates whose strong constitutions have enabled them to adapt themselves to new conditions without serious results, will do endless injury to the vast majority who have been overworked, weakened by bad habits, unfortunate circumstances and ignorance of precautions.

Although, comparatively speaking, the year's experience has been worthy of much self-congratulation on the part of the army of occupation, showing as it does that the valuable lessons of the most advanced study and research have been put into practice, and that the results have been satisfactory, yet the statistics show that many lives have been sacrificed to the importance

of the cause—the mortality rate being 98 per 1000 for the army of occupation as opposed to 20 per 1000 for the “stay at homes” during the last year.

In view of the facts relative to being acclimated, we can better appreciate the value of the “home detachments.” And in this regard it is to be regretted that as yet the cavalry regiments have not been offered the same opportunities as have been afforded the infantry, for, as is self-evident, the necessity is greater in the more active and mobile branch of the service. If properly managed the scheme will enable those who have been worsted in the struggle to return and recuperate, and will keep only the strongest to battle with severe climatic conditions.

As to climate we have learned much since we have been here. The thermometer does not show ordinarily higher temperatures than are seen recorded in the temperate zones. This is probably because the clouds screen off or carry away some of the sun's heat and prevent accumulation and because Cuba is a breeze-swept island. It is commonly remarked that people are not sunstruck here and few suffer from heat exhaustion. Such is the case with the natives, but with foreigners it is very different. I remember when General Hawkins' brigade was ordered to quickly advance from Siboney up over the mountains to reinforce the 1st United States and 1st Volunteer Cavalries, which had encountered the Spanish forces at Las Guasimas; many men fell out overcome with the heat, and for a time I despaired of the life of one of our junior officers, who became maniacal with delirium from its effects. The great humidity preventing the evaporation of the normal insensible perspiration with its waste products, makes the heat less tolerable and does much to cause the feeling of *malaise*, which is so distressing. The term “calentura,” which is rightly a slight fever due to exposure to the sun's rays and expressive of abnormal retrograde changes in the tissues, has been incorrectly used to indicate fevers of malarial and other origin. The fact that the skin is so constantly bathed in warm perspiration explains the prevalence of all forms of skin eruptions, defects, boils, etc., due to lessened resistance, and shows the importance of the use of a light and quickly absorbing undergarment. Cotton is preferable to wool in this particular.

To any one who has experienced this climate for any length of time, it is plain that our course of action lies between one of two ways, either to change the climate or else change our mode of living to properly conform to the climatic conditions—else suffer the consequences. It is absurd to believe that we can lead with impunity the active lives of the temperate zone while in the tropics. The drills and duties of the soldier must be moderated, else he will succumb. The soldier's habits, his work, his food, his clothing, must be rationally adapted to his habitat.

In my opinion we have done much, but more is desired. The great tendency is to over-exertion in the way of drills. Our soldiers should be instructed in the States and sent here for duty and should be required to drill only enough to keep them in practice. A few years of occupation with its tremendous pension roll will teach us the economy of native troops or what I have just suggested.

Those who have the knowledge of precautions and know how to care for themselves, and have the freedom to do or desist as they please, should have no reason to fear the tropics. But the soldier has many disadvantages. I believe that our soldiers have been well cared for and that their interests have been duly looked after—but the personal equation is paramount, and his indulgences, excesses, and misconduct will bring him to grief here much sooner than at home. I consider that diversions and games to keep up the spirits of the men will do much to keep them in good health, and believe this question deserving of more consideration than has heretofore been given it. There should be a gymnasium as well as a library at every permanent post. There should be fewer calls and every effort consistent with a proper standard of discipline should be made to relieve the monotony and depressing influences of their immediate surroundings and of foreign service. The strict and contracting orders of a cold climate prove exceedingly irksome and unhealthful in a locality where nature teaches relaxation and freedom of action.

The cities, in or near which our troops have been quartered, offer an interesting study and a very important one as relating to the health of the commands, for here it has been that our

troops have met with the worst health conditions, with which they have had to, or of their own free will, have preferred to contend. As seen when we first came, the cities could scarcely have been more filthy and unsanitary. The streets narrow and performing the functions of sewers to a greater extent than those of thoroughfares, separated the small, filthy, dark and damp abodes, overcrowded, unventilated and containing as central sources of disease, malodorous cesspools, breeding infection and exhaling poisons. Many of these houses were infected with yellow fever and tuberculosis. The water supplies were either contaminated at their sources or in the dwellings themselves. The plumbing—where any existed—was defective. The ground air and all that it carried with it arose and permeated the whole structure. The ground water—a most important consideration in domestic sanitation—had abundant chance to produce its most deadly results. The cities were inhabited by people, many of whom were anæmic, emaciated and diseased, and who continued to serve as ignorant carriers of the *materies morbi* from place to place, distributing the seeds of disease into the utmost recesses of house and hovel until the cities were veritable hot-beds of infection. To all of this had been added the horrors of war with its consequent misery and suffering, its poverty, its fatherless families, its orphans and widows, its vice and corruption. In these centres our soldiers were to spend their spare moments from drill, find their amusement, and mingle with the people.

It was a common sight to see the vultures fighting for the kitchen refuse, which had been placed upon the roofs for them to carry away, while from the street a few feet below one could see the naked urchins with protruding bellies and emaciated extremities begging for bread or crying of pain. If cleanliness is next to godliness, these habitations must go down in history as the most hellish holes of unhealthfulness ever occupied by humanity. Was it surprising that famine and pestilence stalked the streets and held high carnival?

To say that the army of occupation has cleaned the cities, has fed the starving, has cared for the sick and has started and kept going the wheels of government—without a greater mortality than it has sustained, is to pay a high compliment to each

and all of its individual constituents and emphasizes the thoroughness of American methods.

With the memory of the forlorn outlook at the beginning, the discouraging prophecies of epidemics during its continuance, we now, at the end of the first year's work, stand pleased and proud of its progress and picture the grand promise of undoubted results.

However, we must not be forgetful that the causes have not all yet been removed and our soldiers should remember that the hovels are sources of infection, that the stores, saloons and public places are still dangerous, that many of the people are consumptives and syphilitics or the wrecks of a common blood destroying disease known as malaria, that many have lost strength and have become nervous and weak from the excessive use of tobacco, and that others have wasted or burned up their God-given energies by alcoholic and venereal excesses and indulgences. If our men can have these facts impressed upon them as they naturally excite the interest of the physician, and were they to note the almost universally good health of their officers, who know now to properly care for themselves, they would, I believe, be better able to guard against the many dangers which constantly beset them.

At the beginning of the sickly season I made a bunk to bunk physical examination of the enlisted men of this command and talked freely in regard to the personal precautions against the prevalent diseases—and judging from results my words did not fall upon deaf ears—and I doubt if the mortality has been so small proportionately in any other command on the island.

Given an enlisted man of average strength and intelligence who lives in clean government quarters, eating the ration, drinking boiled water, who is particular as to his personal cleanliness, who wears and frequently changes his underwear, who keeps good hours, who has neither alcoholic, venereal nor tobacco excesses, who uses his best judgment and the surgeon's advice in satisfying his passions, who avoids the filthy places in the cities, and who is blessed with a detachment commander who conscientiously looks after the interests of his men, and I guarantee to him in the tropics a health record equal to my own.

Of special considerations, I think none of more moment than

the use of boiled water for drinking purposes. Notwithstanding the recent investigations of Manson, Ross, Bignami and others who have proved the important rôle of the pestiferous mosquito in the etiology of malaria, it has not been shown that this is the only method of causation, and many instances and considerable experience have tended to strengthen my belief in the water-borne theory as the more common mode of infection. The fact that officers who constantly drink boiled water seldom suffer the disease; the fact that it breaks out on board-ship where there are no mosquitos, but where the tanks contain water from a malarial district; the fact that during the Santiago campaign when the men suffered the worst from malaria they drank un-boiled water, and now that they use the boiled water it is of slight prevalence, although in the same mosquito locality, and the fact that in our garrison the percentage of cases of malaria did not increase when the mosquito bars were put away but runs hand in hand with the strict or lax compliance with the orders as to the boiling of the water, and being most prevalent among the recruits who have not learned the lesson of its importance, or else disobey the instructions. In my own case, I drink the boiled water only, but seldom use the mosquito bar. These and the hundred and one cases I have traced directly to neglect of the precaution have made me firm in my convictions on that point. The drinking water in the tropics furnishes the essential requisites for the rapid multiplication of the lower forms of life. Its temperature and its rich vegetable pabulum make it a culture medium *par excellence*, and it often contains the causative elements of tropical dysentery, diarrhoea, typhoid, malaria, cholera, when epidemic, and the different forms of intestinal worms and blood parasites. And it is to destroy these that the water should be boiled. If persons drink water which is not boiled and remain healthy they have reason for congratulation that their intestinal tracts are so proof against poison, and they deserve seats in the side-shows with the glass-eating and sword-swallowing freaks, but never in the lecture chair for the good of humanity.

As to the food of our soldiers: much valuable information is in course of compilation. A medal has been offered by an officer of the Medical Department for the best essay on this subject,

and it is to be hoped that the results will be practical and beneficial. The present ration, while furnishing much fat for the tropics does not make its use compulsory and answers as it naturally should be expected to do, being the result of accumulated experience for many years, both the requirements of peace and war. It is my professional belief that the tendency is for us to eat too much in the tropics. The natives are not great eaters. In higher latitudes where the system is called on to maintain the normal temperature in spite of the external cold it is rational that much of fuel should be added, but where there is no such extra demand and where the excretory organs are always taxed, too much fuel is liable to cause the human machine to become clogged with the cinders and the waste products, as it were, to use a mixed metaphor.

Muscular rheumatism, neuralgias, headaches, impaired appetite, and the feeling of *malaise*—all so common to the daily life in the tropics—are the indications of a faulty elimination of the waste products of the system.

I do not mean that a substantial diet is not consistent with good health, but if there be one tendency for ill more than another to combat, in this particular, it is over-indulgence at the mess-table and a thoughtless disregard of the resulting demands of nature. The sewers of the system require frequent flushing under present climatic conditions.

One other question—as regards which I wish you to understand I do not voice the consensus of opinion among most other army surgeons, who have grown to believe it as a physiological requisite of our soldiers—and that is the drinking of so much coffee. Men in the field, who in active service need the lash of stimulant to tide over the crisis of physical strain and exertion, may require it; but in garrison life I have plainly seen the evil results of the excessive use of this pronounced nervous excitant. Young men do not require it, are made nervous, irritable and sleepless by its use in such large quantities, and I believe the demand for it is another manifestation of that craving for stimulant of all kinds so common to that class from which our army is recruited. More water and less coffee is a recommendation that I boldly offer in the face of much opposition as especially opportune and important at the present time.

As to prevalent diseases : malaria stands first in importance, being the cause of more admissions to sick report than from all other causes combined. And it is probable that long after yellow fever and small-pox and other more severe diseases shall have been eradicated we will still have a quota of cases of malaria. Malaria ordinarily is neither a dangerous nor a troublesome disease, except in its pernicious form, and is very amenable to treatment ; but when it has been allowed to run its course for any length of time, it becomes exceedingly difficult to cure and is responsible for a high mortality. It is strange that people who have been subjected to such a ravaging disease for so many centuries, have not learned how to prevent it, to treat it successfully, nor to recuperate from its effects. But such seems to be the case. The small statures, the emaciation, the anæmia, the deficient mental and physical capabilities of the natives in general are evidences of the heavy taxes levied by this king of parasitic blood-sapping diseases. Every soldier who suffers from malaria presents strong evidence by that very fact of having disobeyed instructions. As a result of their own negligence do they chill and burn. Pernicious malaria and malarial hæmaturia are the severe forms and are to be greatly dreaded.

As to yellow fever : the commission sent to Havana early in the season to study the disease rendered a most important report, and beside confirming the discoveries of Saranelli as to the cause, affirmed that sunlight, cleanliness and dryness were next to disinfectants the most practical methods for its eradication. They proved a most important fact—namely, that the disease is contracted through the respiratory organs and not introduced through the stomach with the food, as was formerly believed.

The only outbreak during the year to rise to the importance of an epidemic was at Santiago, where during the season there were 232 cases with 53 deaths. The facts of immunity almost absolute to the Cubans and Jamaicans, the non-immunity of the Spaniards and the marked predisposition of foreigners—especially the female nurses—were definitely established, and as told by one of the surgeons in his report, "The sudden checking and ultimate control of this epidemic in the very height of the dangerous season, demonstrated that yellow fever can be handled successfully."

Dysentery comes next in importance; and the statistics both in Cuba and the Philippines prove it of great mortality. During the time the 16th Regiment of Infantry was occupying the trenches on San Juan Hill, although there were in the neighborhood of 500 very sick men, only two died of disease and both of these succumbed to acute dysentery, which had become far advanced before they reported to the surgeon. Early and energetic treatment is essential.

During the past year there was an epidemic of small-pox in the province of Santiago, and of the 1185 cases there was a mortality of 10 per cent. This was due to the fact that only 2 per cent. had been vaccinated. Of these none died.

Venereal diseases are a constant menace to the strength of the commands. Soldiers become intoxicated and forget precautions in satisfying their passions which, as is naturally expected, are in keeping with their high physical development. Men in the prime of life, when all the physical powers are at their best, are excusable in obeying one of Nature's greatest laws; but the reckless way in which many fall victims, because of neglect and utter disregard of instructions, should be neither encouraged nor tolerated.

Before closing I should like to state that I have been impressed with the evil effects of tobacco in the tropics, as giving rise to an irritable condition of the heart; and also with the deleterious effects of alcohol and "aquadiente."

Our duties as officers lie in the direction of a close study of the climatic and other vicissitudes to which the men are subjected, and by careful and disciplinary methods to overcome the dangers of their present foreign service.

To me it has seemed especially fit and proper that an officer, possessing a deep professional knowledge of sanitary as well as military affairs, has been selected to direct one of the most humane undertakings in the history of the world; and it remains for us all—as co-workers and responsible agents—to maintain the strength and activity of the army of occupation—the right arm, as it were, of the glorious government we love so well.

MILITARY MORALITY AND MODERN PHARISAISM.

BY MAJOR JAMES CHESTER, U. S. A. (RETIRED.)

DEEP down in the inner consciousness of the average American there exists a conviction that a soldier is a black-guard of some kind, brimful of strange oaths and ugly iniquities. He thinks that to be safely entrusted in a civilized community he has to be restrained by a savage code of laws, specially enacted for his government, and known as "The Articles of War." Of course, he has no idea of military discipline. He thinks it is merely a way the officers have of making the soldiers behave themselves; and he reasons that any law which punishes trivial offenses like assault or battery or wilful disobedience, with "death or such other punishment as a court-martial may inflict," is a barbarous law, and that any man who needs such a law to keep him in order must be a dangerous barbarian.

But this evil estimate of a soldier's character is not always the result of reasoning. In perhaps the majority of cases it seems to be an inherited instinct. The unsophisticated country lad who never saw a soldier, believes he knows what kind of character he is. A soldier, he believes, is a reckless, rollicking kind of man, who is always looking for a fight, and sober only when he cannot help it. And so, when he enlists he tries to act up to his conceptions of the soldier's character, and it becomes the unpleasant duty of the disciplinarian to convince him that he has been mistaken. Civilians often think that such young men learn their bad habits in the army. But that is a mistake. They first blossomed in the army no doubt; but the seeds from which they sprang were those ideas which he held in civil-life, perhaps instinctively, about the character of a soldier. Every recruit tries to play old soldier prematurely, and if he plays up to a false and vicious ideal, he is bound to feel the corrective lash of discipline. It takes time and much unpleasant experience to get rid of his false ideas; but military discipline is a patient as well as a powerful corrector, and it generally succeeds. Gradually the recruit learns that soldiers

are men very much like other men ; that they are required to be decent, cleanly, respectful and obedient ; and that drunkenness is a crime. He finds out in the course of time, that if he does not conform to these requirements his military life will not be a happy one, nor likely to last long, while on the other hand conformity will secure for him a short novitiate, pleasant service, and prospects, perhaps much superior to those of his peers in civil life.

An accepted recruit is a superior specimen of the class to which he belongs. He has no discoverable blemishes, moral or physical. He has passed a critical examination which not every one who fancies himself fit to be a soldier could pass. As a matter of fact, out of every five applicants for enlistment, perhaps four will be rejected. The recruit is no longer a gutter snipe or a wharf rat, with only sense enough to pull a trigger or stop a bullet. He is a young man of fine physique and some intellect, a specimen of the best of his class. Of course, there are black sheep in every flock, but they are weeded out soon after discovery in the army.

Unfortunately civilians know very little about soldiers. They rarely come into close contact, and when they do they misunderstand each other. The civilian is cautious, if not suspicious. His inherited instincts make him so. And the soldier is proud, and meets the civilian's caution with haughtiness. Perhaps he feels that he is the better man, and that the citizen is putting on airs. At any rate, they rarely form lasting friendships, and the fault is not wholly on one side. A soldier is not easily understood. When one has maintained close relations with him from boyhood to old age, in peace and in war, in camp and in garrison, he naturally feels that he knows him. And yet even then he sometimes doubts it. One thing, however, he is sure of. The civilian's conception of a soldier is wrong. Of course, a genius like Kipling is an exception. He sees the man under the uniform and the immortal soul inside the man without wasting a lifetime in observation. Kipling's pictures of the soldier are inspirations, those of ordinary observers are only sketches of appearances. Still such sketches have some value, and it is because of that consideration that these pages have been penned.

The question might be asked here, Why should a soldier be harder to understand than a citizen? The answer to that is: Because he usually wears a mask. Look at a regiment on parade. To a casual observer all the men look alike, whereas no two of them are alike. Their similarity is due to their uniform, their bearing, their expression, or rather want of expression in their countenances, and the exactness with which they all do the same thing at the same time. But all these are consequences of the trimming and training they have undergone. Individuality is hidden behind a mask, and it would take a genius to tell the good men from the bad. And good soldiers suffer in consequence. If there be one black sheep in a regiment he gives character to the corps, because, to the casual observer, every man in it looks just like him. In civil life a man carries his individuality about with him; in the army he wears a mask.

Before the Civil War few Americans had ever seen a soldier. The army was small, and most of it was employed on the plains. Wherever redskins had to be punished or ranchmen protected there the soldier pitched his tent, if he was lucky enough to have one. He was the pioneer of civilization, and admirably suited to the business. Civilians generally admitted that. But they hardly considered him fit for anything else. And so, when fortune sent him to an Eastern station, he was not received with open arms. The soldier, as a rule, was discontented in the East. He would much rather be on the plains, even if his life were to be in danger every hour. There he felt himself a man among men. In the East he was a social outcast. Nobody cared for his society. And yet he carried an American heart in his bosom, as brave and generous and tender and true as any in the nation. He had faced dangers and forgotten it. He had endured hardships, and battled for dear life with stealthy savage foes so frequently that such a life seemed natural and not extraordinary. If ever he had been proud of his record, his reception in the East had cured him of it. He felt, perhaps with sorrow, that his proper home should be the plains.

Such preference for barbarism indicated perversity to the civilian; but the civilian knew little about the comforts of even Eastern posts in the days of the old army. A first class Eastern

station was not a military paradise in those days. It might be classified more appropriately as a military prison in which soldiers were confined for a term of years, without trial and conviction, or evil done. Duty held them bound during the day, and men with loaded guns were set to watch them during the night, for fear that they should wander out and for a moment feel that they were free. These barbarous rules have been relaxed ; but forty years ago they were in force and helped to keep the soldier's degradation fresh. The negro slave was not the only man emancipated by the Civil War.

Of course, the soldier sometimes went on pass—once a week, perhaps. But pass was not the pleasure that it should have been. No doors were open to the soldier save those of whiskey shops and vicious dens of a much more dangerous type. These shops depended on the soldier trade, and the soldiers patronized them. They had nowhere else to go. Where were the professional philanthropists and those who seemed to be so anxious about the soldier's soul in those days? There they may have been, but none of them had the courage to open a decent door to the soldier starving for the friendship of his kind. The inherited idea forbade it.

But something should be said about the soldier's home life. What sort of a place was the barrack room of forty years ago? Was it not clean and comfortable enough for men to pass their evenings in? Well, it certainly was clean, but hardly comfortable. It was the dormitory as well as the day room, and bunks, three stories high, covered at least a third of the floor space. Then a long table with a bench on either side, and the men's lockers fully occupied the second third. It was a large room and accommodated 20 or 40 men, according as the organization was on a peace or a war footing. It was heated by a large wood stove, generally red-hot in winter time, and lighted with two tallow candles. Then there were the gun-racks and the "spit-boxes," filled with sand as conveniences for those who used tobacco. The walls were frequently whitewashed, and the woodwork unmercifully scrubbed on Saturdays. But in spite of every effort and the use of many poisons, the room was alive with bedbugs. There were few prisons in the country less desirable as a domicile than the barrack room of forty years

ago. But it may have had its value as a training in fortitude. Certainly it made sleeping on the bare ground in the open air a luxury. But sleeping out of doors was prohibited. It was considered dangerous to health. Sleeping in a badly ventilated room, containing a red-hot stove, and probably 39 human companions and 100,000 bedbugs was considered safer. Is it any wonder that soldiers had no fondness for their barrack rooms, or that they patronized the only other doors which opened to them?

But no description of the soldier's surroundings forty years ago would be complete without some words about the sutler's store. The sutler's store was quite an institution. Moreover, there was money in it—not for the soldier, but for the sutler. There the soldier bought tobacco and things for little more than twice the market price, and there he could buy his beer at similar rates, and at some posts an article known as whiskey, but hardly worthy of the name. One may imagine that the position of sutler for a large garrison, cooped up in the way we have described, was a veritable gold mine. Consequently, all kinds of influence, legitimate, illegitimate and disreputable were resorted to, to secure the appointment.

The appointment of sutler was simply permission to rob the soldiers under certain restrictions, and people who enjoyed that sort of thing were ready to bid high for the position. But corruption, like murder, will out. Some disreputable transactions came to light, and the sutler was abolished—or rather required to change his official designation. He became a post trader, but the business went on at the old stand in pretty much the old way. The change was made merely to satisfy popular opinion. The public was permitted to believe that a radical change had been made in the manner of supplying necessities to the soldiers.

And so the soldiers were supplied and fleeced and no protests were made, except on one occasion, during the Presidency of Mr. Hayes. His edict was against the sale of intoxicating drinks, and sounded well. But its effect was bad. It merely drove the soldier's custom to the dens and dives which nestled near all military posts in those days. If the edict was issued in the interest of military morality it was a flat failure, for intem-

perance among the troops increased, and intemperance was not the worst consequence of the change. Surely such results were not intended. But temperance fanatics should look before they leap. Certainly, if they had been advocates for the whiskey shops and brothels in military neighborhoods, they could not have done better for their clients.

Another serious error in the civilian's estimate of army life, which should not be wholly overlooked, is the belief that officers lord it over their men in a most tyrannical manner, and care nothing for their physical comfort or moral welfare. As a matter of fact, these subjects occupy an officer's thoughts during every waking hour. The captain that is not proud of his company would be a curiosity in the army, and whatever a man is proud of, he is interested in. He knows his men, he has studied them individually, and the men knows that he knows them. To be sure, he indulges in no maudlin sentimentality about them, and makes them no flattering speeches. When they hear his voice it is always in the accents of command, and they know that it speaks for their good. There is a confidence between a captain and his company, which the civilian cannot understand. The captain trusts his life to his men, and the men trust their lives to the captain.

But customs become second nature when persisted in sufficiently long, and custom had bound some galling degradations on the soldier's back, which had to be carried to be appreciated. The officers of the old army had never seen it otherwise, and so they believed it to be right. But the soldier felt it crushing the very manhood out of him. If a friend called to see him in the evening what could he do with him? Could he take him into the overcrowded barrack room so brilliantly lighted with the two tallow candles? This, of course, refers to old army times. Certainly not. The presence of civilians in the barrack room was forbidden. Could he take him into the mess room and offer him a cup of coffee or the like? Certainly not, again. This was also forbidden. Could he take him to the sutler's store? No; that was shut at Retreat. What could he do with him? Nothing. Is it likely that such a visit would be repeated? And is it any wonder that the soldier was considered a man apart, whom nobody cared to know? And so, in the old army, fine

healthy men, without discoverable blemish, moral or physical, were driven into desertion, insanity or vice, because an inherited instinct had painted them in false colors, and ancient custom had enacted their isolation. The "Thou shalt not" had it all its own way, and the modern Pharisees were satisfied. Thou shalt not enter any decent door. Thou shalt not walk in the public street without a pass. Thou shalt not entertain a friend in any way. Thou shalt not do a thousand things which men of thy degree may do in civil life. Thou art a slave, a prisoner; because thou hast agreed to stand up when called upon and "have the soul blown out of you" for thy country's sake. Thou must be held a prisoner until the happy day arrives. And custom and the Pharisees thought that was right. They thought that locking up a soldier's body would help to save his soul. "Man's inhumanity to man" wears many strange disguises.

But the clouds which darkened the soldier's life began to lift a little after the Civil War, and when the canteen was created a new day may be said to have dawned. The canteen was not an entirely new idea. It had existed in the English army for many years, and had become not only a success there, but a necessity. But it was a new thing in America. It had many friends among the officers, but some few looked upon it with suspicion. If it should succeed much that was ancient, but had no other claim to existence, would have to go. Fortunately it had the approval of the War Department. It was established by order, and friendly heads and hands piloted it into success. It grew rapidly; became a coöperative store; had a pie counter; a billiard room; a reading room with newspapers and magazines; a gymnastic outfit; a ball room; a beer department, and a balance at its bankers. It gave monthly prizes for athletics. It gave monthly entertainments to invited friends. It paid monthly dividends to the soldiers' messes. It sold everything except beer, at cost, and it sold the best of beer cheaper than the neighboring whiskey shops could do.

Its athletic contests and its social parties bring it into contact with civilians of good standing. To beat the army team is now no mean distinction for any college, and to be invited to a military ball is a much prized honor by the soldier's peers in civil life.

The creation of the canteen marks an era in army life. Up to that date the soldier was a social outcast; tabooed by men who hardly were his peers; compelled to pass his idle hours in a cheerless barrack room or seek society in dens and dives which need not be described. None but dull, degraded men could stand such a life for any length of time. The men now in the army would not stand it. But in the old army some got used to it, some deserted, some sadly sank into drunkards' graves, and some were sent to St. Elizabeth. The wonder is that such a tragedy should have been allowed to run year after year in a Christian community without protest. A hearty "Good morning" between peers in civil and military life would have stopped it. But that was the one remedy which so-called reformers never thought of. The "Thou shalt not" was their only remedy, and it has never saved a soul and never will. But what the "Thou shalt not" has failed to do, the canteen is in a fair way to accomplish. It is breaking down the barrier between the men who wear uniforms and their peers who wear civilian suits, and every well wisher of the army should wish it "God speed."

Can any one in or out of the army say that the foregoing sketch is overdrawn? On the contrary, it has been purposely toned down. Only a fraction of the benefits which have come from the canteen has been stated. Discipline has been improved; drunkenness has decreased; the dens and dives which formerly surrounded military posts have begun to disappear; the soldier has acquired self-respect and is acquiring social standing; he is proud of the service; proud of his uniform, and proud of the canteen. He can entertain his friends when they call on him; he can buy his necessities at cost price; he can read all the newspapers and magazines in his own club room, and he can drink the best beer that can be bought if he feels so inclined at a cost consistent with his income.

Since the advent of the canteen the old time military "Thou shalt not" has been in the death agony. When a man has lost his taste for whiskey it needs no "Thou shalt not" to close the bar-room door for him; when he has a pleasanter place to spend his evenings in he has no desire to enter dens and dives. Soldiers have been wallowing in a "slough of despond." They

have just discovered a friendly rope by the assistance of which they may scramble out. What shall be said of the so-called philanthropist, social reformer, or modern Pharisee who wants to cut the rope, who would rather see the soldiers smother in the slime than save themselves by such assistance? If they had been present where Jesus of Nazareth walked, they would have been among those who pointed their fingers at him and cried, "Behold a gluttonous man and a wine bibber, a friend of publicans and sinners." God help the hearts of those who hope to conquer his kingdom by force.

Reprints and Translations.

SPANISH HASTY INTRENCHMENTS.

(Translated from "*Táctica de Infantería*.")

BY LIEUT. C. W. CASTLE, 16TH U. S. INFANTRY.

GENERAL CONSIDERATIONS.

ON account of the range, precision, and rapidity of fire of the weapons now used in all armies, it is advisable, and even imperative, that troops spend as little time as possible without cover in the zone of effective fire; and all available cover should be made use of, so that the separate movements need not last so long as to unduly tire the men. In many cases the natural accidents of the ground will furnish sufficient protection, but in others, artificial shelter must be provided. It is not possible to lay down a general rule as to just what circumstances should determine the adoption of the latter method. Any force, no matter what may be its strength, may find it necessary to strengthen its position by means of the various kinds of works that come properly under the head of field fortifications; but it will also be useful in many cases to construct hasty shelters in positions to be occupied temporarily. Trenches built with this object in view should never serve as obstacles to the advance of the troops located therein.

A slight parapet of earth, or a simple ditch, is sufficient to effectually protect the soldier from fire, as well as to conceal him from the enemy's view. Officers and non-commissioned officers should be able to select rapidly the locations most suitable for these trenches, and the men should be well trained in their construction. For the use of infantry, these intrenchments, or light field works, are limited to three kinds: the common shelter trench, the ditch trench, and the rifle pit.

GENERAL NATURE OF HASTY INTRENCHMENTS.

The Common Shelter Trench.—This form of trench, which

is represented in Figures 1, 2 and 3, affords the soldier excellent shelter with very little labor; at the same time fulfilling the necessary condition of furnishing no obstacle to the advance of the troops that occupy it, when it becomes necessary for them to take the offensive. From the beginning the men must be made to understand that the object of these trenches is simply to afford protection from the enemy's fire until the moment arrives to advance upon him.

The Ditch Trench.—This is a shelter trench different in form from the preceding, and exceedingly valuable for fortifying a defensive position. It is simply a narrow ditch with nearly vertical sides, opened along the natural surface of the ground, and following its undulations. It is given a depth sufficient to shelter its defenders, the dimensions being indicated in Fig. 4. If there is time, small holes are made at different heights in the lower part of the walls, so that by placing their feet in them, the defenders can raise themselves above the bottom of the ditch, and thus deliver a more effective fire. This may also be accomplished by means of large stones placed upon the bottom. Works of this class offer great advantages by reason of the methods followed in tracing, constructing, and utilizing them, and of the system of securing mutual flanking arrangements.

Rifle Pit, or Isolated Trench.—This is a small excavation for two, or at most, four marksmen, its section being represented in Fig. 5. That for two men may be finished in fifteen minutes. The rear wall of the trench is cut with a gentle slope or with steps, to facilitate withdrawal, and the berm on the side towards the enemy may be omitted. If there is danger of a flank or enfilading fire, the parapet is extended to the rear at one or both flanks, with the same profile as in front, the extension being carried no further than is necessary. After a little practice, each pair of marksmen, with pick and shovel, can construct a pit simply at the word of the commander, without the necessity of a previous tracing.

TRACING AND CONSTRUCTION OF HASTY INTRENCHMENTS.

Tracing the Shelter Trench.—The general principles of field fortifications and their application to the terrain must be observed. In constructing works of this class, the general direc-

tion will coincide with that of the line of battle. The particular trace of each part will consist as far as possible of a slightly broken right line, curved lines being used only when demanded by the necessity of avoiding an enfilading fire from the enemy. The trench will not be continuous along the front of the firing line, but at intervals open spaces, 50 or 60 meters wide, will be left to allow the passage of cavalry and artillery.

In each battalion the adjutant or a captain, assisted by several sergeants, marks out the extent and direction of the part of the trench belonging to his command. To do this, in case cords and stakes are lacking, he places as markers upon the outer edge of the ground that is to form the berm (that is, upon the line that is to be the foot of the interior slope) several soldiers 30 or 40 meters apart and carefully aligned. Then, with a pick he scratches a mark on the ground along the line which the trench is to follow, and assigns to each company its portion. Each company commander will establish a perpendicular to the line already traced. Upon this perpendicular he will mark off distances of 0.3 and 1.7 meters, and thus obtain two points through which to trace parallels to the first line. These will indicate the width of the berm and the rear edge of the trench, in accordance with the profile represented in Fig. 1. This tracing should occupy at the most two minutes. To trace the trenches represented in Figs. 2 and 3, the same method is employed. In all these the excavations have the same width, but differ in depth and in the steepness of the slopes. The latter may vary, according to the nature of the soil, from vertical to the natural slope of the earth. In the first two the bottom will be cut in the form of a plane inclined towards the rear, and also slightly inclined longitudinally, for purposes of drainage. In the third form the bottom will be as indicated in Fig. 3.

Construction.—Experience shows that in ordinary earth the working party should be composed of half the force that is to occupy the works. The tracing having been completed, the party carrying their arms and tools will march along the rear of the line, and when opposite the centre of their position, will halt and face towards the enemy. If the soil is dry, the commander of this force will order the arms placed on the ground in front; but if not, he will have arms stacked and knapsacks,

blankets and shelter tents deposited in the prescribed manner. Then he will have his command take intervals to the right and left, forming in single rank along the whole front, each man occupying a front of 0.84 meters if the ground is hard, and of one meter if of ordinary quality. Each one will at once throw himself upon the ground so as to be concealed from the enemy. The sergeants and corporals will mark off with a pick spaces of 2.5 or 3.0 meters front, thus indicating the task of each group of three workers. Ordinarily two of these will have shovels and the third a pick. These preparations having been completed with the greatest possible rapidity, the chief will command: "Commence working." All will place themselves near the inner line of the berm, kneeling or lying down, as the intensity of the enemy's fire will allow; and under the direction of the officers and non-commissioned officers they will commence the excavation, each group deepening its part as rapidly as possible, and throwing up the earth to the front in a mound of such form that, even before the trench is completed, it will furnish some shelter in case of a sudden attack. Care will be observed in carrying out the directions as to the width of the berm, evenness and slope of the walls, depth and inclination of the bottom, height of the parapet, and thickness along its top. If the earth should be very hard, each detachment may be of double the strength prescribed, so that the working party may be relieved frequently. This work will generally be finished in thirty minutes for cover standing, in twenty minutes for cover kneeling, and in fifteen minutes for cover lying down.

As soon as the trench is completed the detachment will reform in the rear in double rank; will take arms and equipments at the command of the chief; and will then await further orders. During the work the covering force will be stationed about one hundred paces in advance of the intrenchments, or at such other place as the nature of the ground may require.

Tracing the Ditch Trench.—These trenches are established in one, two, or more lines, following almost horizontally the undulations of the ground. They should in general occupy positions not easily visible to nor assailable by the enemy; but if this be impossible, covered approaches should be provided so that the troops that are to man them can enter without being

exposed to hostile fire. The position selected should be such that flanking arrangements can be secured by other trenches of the same kind within effective range. The latter should be as well hidden from the enemy as possible, and should be able to cross their fire with that of the former. The ground having been selected with these objects in view, the line will be traced as prescribed for the common shelter trench. The width of the ditch will in no case exceed 0.50 to 0.60 meters, the depth being from 1.40 to 1.50 meters, and the walls nearly vertical.

Construction of the Ditch Trench.—Whenever the circumstances and the nature of the ground permit, works of this kind are constructed beyond the range of the enemy's fire, and even beyond his vision, so that the work may be commenced all along the line simultaneously. But should it be necessary to construct the trench under fire, it may be driven lengthwise, commencing at both flanks. The earth removed will be scattered in the vicinity, care being taken not to form any parapet.

Isolated Rifle Pits.—As these are detached intrenchments that are to be constructed without being previously traced, there will be assigned to this duty those men in each company who are best instructed in such work.

PERFECTING THE SHELTER TRENCHES.

When it appears advisable, after the completion of the work, to arrange for a more permanent occupation of the position, the trench will be enlarged, the parapet being thickened by the earth removed. Steps will be cut in both slopes of the trench, and some ramps will be provided in the rear slope and at both extremities, to facilitate ingress and egress. If there are trees in the vicinity they will be cut down and used to construct one or more lines of abattis, palisades, *chevaux-de-frise*, or any kind of obstacles that will serve to impede the enemy's approach.

METHOD OF MANNING THE TRENCHES.

To fully man trenches of the profile represented in Fig. 1, it is necessary to allow two men to each meter of front. They will form in two ranks, the front rank leaning against the interior slope of the parapet to fire, while the rear rank fires standing upright in the bottom of the trench. Officers and non-commissioned officers will place themselves along the interior of the trench at such

(Dimensions in meters)

FIG. 1.

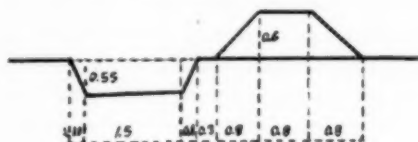


FIG. 2.

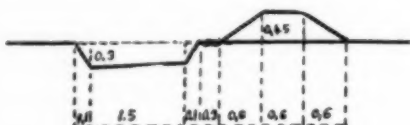


FIG. 3.



FIG. 4.



FIG. 5.



points as will enable them to supervise the defense and regulate the direction and rapidity of the fire, and also to make such dispositions as may be necessary in case the forces under their command have to advance or retire. The defenders of the shelter trenches represented in Figs. 2 and 3 will be of the same strength as in the preceding case.

The ditch trench is occupied by a force consisting of one man to each meter of front, as it is always designed to contain only a single rank, in which must be included also the officers and non-commissioned officers.

THE WAR OF THE FUTURE.

(Translation from the "Skandinavian" Norwegian.)

By FREDRIK L. KNUDSEN, 1ST LIEUT. 8TH U. S. INFANTRY.

THE war in South Africa has been a surprise to all military men and will cause the adoption of new fighting methods. The English officers and soldiers have encountered conditions with which they have been unable to cope, an invisible enemy spreading death and destruction in their ranks without their being able to retaliate. All correspondents concur in their statements as to this, and everybody is agreed that war must be carried on in quite a different manner from the one now in use.

About three years ago a work was published in which was predicted what has actually taken place in South Africa. The remarkable about this work is that it was not written by a prominent soldier, as one would naturally believe, but by a civilian, Professor Johann von Bloch, who is a strong advocate of universal peace. He is a personal friend of the Russian Czar and really his privy counsellor. He possesses an enormous fortune and his ability as a financier, which he has shown in some of the boldest enterprises, is well known throughout Russia. His only work "The War of the Future," was written at the express desire of the Czar. It is a work comprising twelve volumes, and these twelve volumes represent an almost superhuman undertaking, which he completed in the course of five years by the aid of a few assistants. The leading thought

in this work is "war against war," "universal disarming." For this cause he has spent a large part of his fortune; he has devoted his life and influence to it; he writes articles in support of it, travels about for it, and he is now erecting a pavilion at the Paris Exposition in which all the horrors of war will be realistically represented; in short, his life is a constant war against war.

The following strategic and tactical rules are laid down by Professor Bloch:

1. The operations of the war of the future will principally be confined to sieges and attacks of fortifications.

2. Frontal attacks will be impossible on account of the enormous losses they will entail, and will be used only as a last resort.

3. If the fighting forces are of equal strength the war will last much longer than formerly.

4. It will be almost impossible to gain decisive victories, because the defeated forces will occupy new positions which have been prepared beforehand.

5. Advanced parties will play a more important rôle than formerly, because they will prevent an effective use of the artillery by killing its horses.

6. Reconnoitring will no longer be possible. The enemy's position can be discovered only by his fire, and the use of smokeless powder will make this still more difficult.

7. The trenches which protect the men from fire will be invisible.

8. The loss of officers will be considerably greater than formerly.

9. The "Red Cross" will be compelled to do its work under fire on account of the long range of the modern weapons.

The war in South Africa has proved every one of these rules. It seems almost incredible that they were written three years ago; they seem rather to be lessons learned by some efficient officer in the battles at Magersfontein, Colenso or Spion Kop.

In an article in the *Revue des Revues* Professor Bloch points to the fact that all military authorities are agreed that the new weapons have made the attack more difficult, while they have

facilitated the defense, and that the conditions may be put as 8 to 1.

The Boers, whose army organization lacks everything for an effective attack, were therefore compelled to depend entirely upon their knowledge of the ground, as they have done, by occupying a number of advantageous positions calculated to compel the English to make an attack in which the Boers would have the advantage. The nature of the country has also facilitated this very much.

Another danger to the attack is found in the long range rifles. The firing line of the defender is under cover, while that of the attacker is not. Small detachments of sharpshooters are stationed at points commanding the roads which the adversary's artillery must use, and the smokeless powder makes it difficult to discover the place from which the fire comes which kills men and horses. The artillery cannot reply, because it does not know in which direction to fire. This is just what has happened in South Africa.

But how is the attack to be made? This is the puzzle which must be solved.

General Müller, of the German army, says that if a complete annihilation is to be avoided, the soldiers must creep forward like moles and try to conceal themselves from the view of the enemy. But the distances to be covered in this manner are great, and experiments which have been carried on in Germany have demonstrated that this manner of advancing is impracticable. Very favorable ground for carrying out these experiments had been chosen, namely, a grass covered plain, free from stones, and about 1500 feet long. The soldiers were much more tired after creeping over this piece of ground than they would have been after covering a much greater distance in double time, and what was worse, their arms, hands and knees swelled up and they were unable to fire steadily and accurately after having advanced in this manner.

The war in South Africa confirms the statement that modern wars will be of long duration. Von Moltke remarked once, that even if there would be no more Seven and Thirty Years Wars, no more short wars with a few decisive victories could be expected.

The well-known military writer, Fritz Hoenig, admits that it is possible that we shall have a new era of sieges, in which the defender will have nothing to fear from any attack except that unavoidable and irresistible attack which hunger will make on his stomach.

The question of provisions will therefore be the most important for small nations. To judge from the events in South Africa, there seems to be no doubt that, for instance, the Scandinavian Peninsula can be defended even against a great power, when the strategic and tactical side of the question is considered. But since the attacker would defend himself equally well against the defender's counter attacks the whole struggle will resolve itself into a kind of a long drawn out siege, and then it becomes a question of holding out.

"The resources of a country will decide the outcome of a war," says General von Blume, in speaking of its long duration. "The resources will be exhausted before the fighting energy of the army," says von der Goltz.

The old proverb still holds good: "There are three things necessary to carry on a war: "Money, money, money."

THE BATTLES AROUND SANTIAGO AS OBSERVED BY A SWEDISH OFFICER.*

(Translated from "*El Boletín Militar*," *City of Mexico*.)

By COL. ED. E. BRITTON, N. G. N. Y.

I. EL CANEY.

ON the afternoon of June 30th, the American army † was concentrated to the eastward of Santiago, prepared for the attack. Duffield's brigade was sent along the coast

* Captain Wester, military attaché to the Legation of Norway and Sweden in Washington, and who accompanied the headquarters of the General Commanding the American forces, gives the following account of the engagements which took place around Santiago.

† The expeditionary corps under command of General Shafter was composed as follows: First Division, Kent's, 5173 men, divided in 3 brigades (Hawkins, Pearson and Wyckoff).

Second Division, Lawton's, 5879, three brigades (Miles, Ludlow and Chaffee).

in the direction of Aguadores. The main body was divided into two forces: the divisions of Kent and Wheeler, with three batteries, were sent against El Pozo; meanwhile Lawton's division, with one battery, was marched northward to take position to the eastward of El Caney. Bates' brigade was held in reserve to the eastward of El Pozo.

Facing the American army, General Vara de Rey occupied El Caney with 500 infantry, and 1000 at Aguadores; in the centre, General Linares arranged his advanced forces, consisting of 1200 men, around the heights of San Juan, the forts at the entrance of the harbor and the intrenchments defending Santiago meanwhile being occupied by 5500 men.

At daybreak on the first of July, Lawton's division began its advance movement on El Caney. Confidence reigned in the American camp, in which the only fear was, that the enemy would escape without a fight; but in El Caney, as will be seen, they were very far from thoughts of that kind. The houses in the village had been fortified, trenches had been dug in the rocky soil and the fire of each covers a space of from 600 to 1000 meters; at the northeast point of the position, the El Viso fort garrisoned by one company, occupied a hill from which it commanded all approaches.

The Americans proposed to overlap the Spanish position, to accomplish which Chaffee's brigade took the northeast toward El Viso; Ludlow's to the southeast in the direction of the opening of the road connecting El Caney with Santiago. Meanwhile a battery was placed in position east of the village and Miles' brigade moved south of Ducorean, forming the left wing.

About six in the morning the fire opened from the Spanish trenches. Suddenly there could be seen a line of straw hats and the rattle of a volley followed by the disappearance of the hats. This operation was repeated every minute, with perfect

Cavalry Division (dismounted) Wheeler's 2737, two brigades (Sumner and Young).

Detached brigade, Bates', 1085.

Duffield's brigade, 2543.

One battalion of artillery, 4 batteries of 4 pieces and two siege batteries with trains. One regiment of cavalry, two companies engineers and one balloon section. Total, 18,216 men, 16 field guns and 8 siege guns.

regularity, showing the force of a resolute determination, which did not fail to produce its effect on the lines of American skirmishers. The bullets cut the air, skimming the ground, wounding and killing.

Soon after, Chaffee's brigade deployed in extended order, but could not be advanced a foot, and Ludlow's also found itself stopped.

Meanwhile the rifle fire increased in intensity and the American battery opened. As the Spaniards had not counted on artillery being brought against El Caney, the guns could be handled as calmly as if in practice drill. They could inflict damage, with no danger of sustaining any.

In a few moments the shells commenced to burst over the trenches, reaching the houses in the village and breaking the walls of El Viso, the shrapnel showering their rain of lead on the position.

In spite of all, the Spanish fire keeps up its unwavering fury.

In front of the El Viso fort can be seen an officer walking composedly the length of the trenches; it is easy to understand the object of this dangerous excursion in the midst of the shot which fills the air; it is the stimulant of example to the brave defenders. They can be seen from time to time waving their hats, and cheers are heard: "Viva España." Fortunate the country which can claim such men.

The masses of Americans lie down and hug the ground as if nailed to it, not to think of moving under such accurate discharges of bullets as the little force of Spaniards are sending them every instant.

Support must be had, and about one o'clock Miles advanced to Ducorean, forming line to the right of Ludlow, and at nearly three o'clock the advance of the reserve brigade deploys on Chaffee's right; but from the trenches on the heights, the Mausers continue to keep up their crackling.

Finally, at twenty-four minutes to four, Chaffee's brigade is thrown forward to the attack of the El Viso fort, but is stopped at the foot of the hill and does not reach the fort until after a second violent onslaught.

The Spaniards give ground slowly and the tenacity of their

defense has demonstrated what few military authorities have ever been willing to admit; that a really good infantry can stand up for a considerable time under the heavy fire of repeating arms. The last American soldier to drop was wounded twenty-three paces from the trenches.

Although the key to the position had been taken, the fight continued. I followed all the changing conditions of this furious defense and this sturdy attack with heart oppressed by emotion.

From the El Viso fort, once taken, the Americans opened fire on the village, which is now the objective of Ludlow's brigade, but its capture was not effected until half past four, the hour at which the last Spaniards abandoned the houses, to keep up their fire from a hill located 600 meters to the westward. An obstinate resistance, worthy of all praise, to which all contributed up to the last moment.

Behind the American line of battle crept the cowardly jackals of the war—the Cubans. From the palm groves east of El Viso, they had taken their little part in the action. On going there, I witnessed the following loathsome scene. Two handsome Spanish lads lay stretched on the ground, partly naked, in the high grass, their black hair soaked with blood, their eyes open and glassy, and below their pallid and disfigured faces their throats had been cut, showing those narrow and deep wounds which are inflicted by the machete.

My position as a neutral and non-combatant did not allow of my doing otherwise than to hasten from the place and its horrible spectacle, and this I did, going in the direction of the American troops, which at that moment were moving to the assault on El Viso, and I addressed myself to their leaders, begging them to send pickets to look after the Spanish wounded in the rear of the captured trenches.

Generous and compassionate as always toward the unfortunate, the Americans heeded my prayer.

An odd coincidence! While occupying myself in saving the wounded Spaniards, on withdrawing, a bullet from their countrymen overtook me, but fortunately, it only went through my coat.

The din of battle ceased only about sunset.

regularity, showing the force of a resolute determination, which did not fail to produce its effect on the lines of American skirmishers. The bullets cut the air, skimming the ground, wounding and killing.

Soon after, Chaffee's brigade deployed in extended order, but could not be advanced a foot, and Ludlow's also found itself stopped.

Meanwhile the rifle fire increased in intensity and the American battery opened. As the Spaniards had not counted on artillery being brought against El Caney, the guns could be handled as calmly as if in practice drill. They could inflict damage, with no danger of sustaining any.

In a few moments the shells commenced to burst over the trenches, reaching the houses in the village and breaking the walls of El Viso, the shrapnel showering their rain of lead on the position.

In spite of all, the Spanish fire keeps up its unwavering fury.

In front of the El Viso fort can be seen an officer walking composedly the length of the trenches; it is easy to understand the object of this dangerous excursion in the midst of the shot which fills the air; it is the stimulant of example to the brave defenders. They can be seen from time to time waving their hats, and cheers are heard: "Viva España." Fortunate the country which can claim such men.

The masses of Americans lie down and hug the ground as if nailed to it, not to think of moving under such accurate discharges of bullets as the little force of Spaniards are sending them every instant.

Support must be had, and about one o'clock Miles advanced to Ducorean, forming line to the right of Ludlow, and at nearly three o'clock the advance of the reserve brigade deploys on Chaffee's right; but from the trenches on the heights, the Mausers continue to keep up their crackling.

Finally, at twenty-four minutes to four, Chaffee's brigade is thrown forward to the attack of the El Viso fort, but is stopped at the foot of the hill and does not reach the fort until after a second violent onslaught.

The Spaniards give ground slowly and the tenacity of their

defense has demonstrated what few military authorities have ever been willing to admit; that a really good infantry can stand up for a considerable time under the heavy fire of repeating arms. The last American soldier to drop was wounded twenty-three paces from the trenches.

Although the key to the position had been taken, the fight continued. I followed all the changing conditions of this furious defense and this sturdy attack with heart oppressed by emotion.

From the El Viso fort, once taken, the Americans opened fire on the village, which is now the objective of Ludlow's brigade, but its capture was not effected until half past four, the hour at which the last Spaniards abandoned the houses, to keep up their fire from a hill located 600 meters to the westward. An obstinate resistance, worthy of all praise, to which all contributed up to the last moment.

Behind the American line of battle crept the cowardly jackals of the war—the Cubans. From the palm groves east of El Viso, they had taken their little part in the action. On going there, I witnessed the following loathsome scene. Two handsome Spanish lads lay stretched on the ground, partly naked, in the high grass, their black hair soaked with blood, their eyes open and glassy, and below their pallid and disfigured faces their throats had been cut, showing those narrow and deep wounds which are inflicted by the machete.

My position as a neutral and non-combatant did not allow of my doing otherwise than to hasten from the place and its horrible spectacle, and this I did, going in the direction of the American troops, which at that moment were moving to the assault on El Viso, and I addressed myself to their leaders, begging them to send pickets to look after the Spanish wounded in the rear of the captured trenches.

Generous and compassionate as always toward the unfortunate, the Americans heeded my prayer.

An odd coincidence! While occupying myself in saving the wounded Spaniards, on withdrawing, a bullet from their countrymen overtook me, but fortunately, it only went through my coat.

The din of battle ceased only about sunset.

For about ten hours, 500 brave men resisted like a wall, without yielding an inch of ground, 6500 others supported by a battery and prevented them from taking part in the principal engagement against the heights of San Juan.

Thereafter, there was heard not another word in the American camp on the question of the inferiority of the Spanish race.

And the fight at El Caney. Will it not always stand before the world as one of the finest examples of human valor and military discipline? Whoever played a part in it, is he not well worthy of honorable reward? Look upon the village! The houses destroyed by shells, the streets filled with dead and wounded. General Vara de Rey is there, dead; his aides at his side, dead; and round about, a great number of his officers and men. All have done their duty from first to last. Happy the country so well beloved by her sons. Fortunate the heroes who have fallen in a combat so glorious. With their blood, they have written in history the name of "El Caney," as one of the most brilliant of warlike deeds, and it should be inscribed in letters of gold on the flags of the troops who fought there.

II. SAN JUAN.

While this drama was being unfolded at El Caney, the battle was waging with equal fury on the slopes of San Juan, where 1200 Spaniards were intrenched.

At twenty-five minutes to seven, an American battery was placed in position east of El Pozo, while two others were held silent in reserve. The artillery fire was opened on the block-house on San Juan hill. Twenty minutes later, the Spanish guns located to the eastward of Santiago, replied with such a well sustained fire that the bodies of troops assembled about El Pozo found themselves forced to abandon their positions.

The divisions of Kent and Wheeler were put in motion under orders to attack the hill of San Juan, one to the south and the other to the north of the Santiago road. The only way was by a narrow path through the brush in single file, there being no room for other formation.

Towards ten o'clock the heads of the columns reached the San Juan River, where they found themselves exposed to a terrible fire, directed against them from the hill and the heights,

with no possibility of deploying owing to the tall and impenetrable vegetation.

They were forced to march out in column of files onto the plain, to the right and left, in open view of the branches.

Wheeler takes the northward from the road, towards a hill held by a small Spanish stockade, and Kent in the direction of the San Juan block-house.

All the regiments get mixed up and form only a confused crowd, which in spite of its superiority in numbers, advances only by short rushes and very slowly towards the objects of its attack.

At one o'clock, Wheeler takes possession of the hill and continues his advance movement against the heights of Jan Juan, northward of the road; but then he finds in his front the same obstacle which appeared at El Caney. Long rows of hats commence to appear and disappear alternately, along the length of the trenches.

The Americans, who are fighting four to one, cannot advance, although the Spanish artillery is not firing at the time and in spite of the aid of the American reserve batteries which have been brought up on the line and opened fire on El Pozo, raining a veritable shower of lead on its defenders.

At twenty minutes past one o'clock, three machine guns join the action, concentrating their continuous fire against the block-house and the situation of its garrison is already untenable. The troops in the trenches are almost destroyed. General Linares, the Commander-in-chief, wounded and bathed in blood, Is not this already more than enough?

The Spanish fire weakens, Kent advances and after some effort yet necessary, the men rush forward with cheers to the crest of the hill, receiving a scorching fire at the last moment. Wheeler follows Kent's movement and places himself on his right.

It had been necessary to fight 8000 men and three batteries from 6.30 in the morning until 1.45 in the afternoon, that is, seven hours, to dislodge 1200 Spaniards from their position. And the work is not completed, as they have succeeded in occupying only the advanced positions. The main line of defense, formed by intrenchments on the hills to the eastward of

Santiago, is intact and the Spaniards keep up from all of these a sustained and furious fire which is continued and continued without cessation.

The Americans, worn by the attack upon San Juan, are all halted and are hardly able to keep their feet. The artillery is advanced from El Pozo to San Juan hill, but the effect of its fire cannot change the situation and finally the coming on of nightfall stops the fight.

III. THE BATTLE OF SANTIAGO.

During the night which followed the engagements described, many of the American officers and men stationed on the heights of San Juan urged their withdrawal, because of the exhaustion of their strength, used up in fighting an adversary so inferior in numbers, but far from the request being acceded to, several bodies of troops which had taken part in the fight at El Caney, received orders to cross over during the night from El Pozo to San Juan to reinforce the main line. At barely sunrise, the battle was renewed. Kent and Wheeler remained at the crests of the heights taken the evening before, with their disorganized and diminished forces of dejected men; fatigue itself had prevented them from intrenching themselves to any extent during the night.

The head of Ludlow's column crossed the San Juan River at eight o'clock, which was followed by Lawton's brigades, and the entire division was formed in prolongation of Wheeler's line, to the northward, thus crossing the road leading from Santiago to El Caney.

Bates, who had gone before, deployed to the left of Kent, meanwhile the artillery taking position to the northward of the block-house at San Juan. This latter having been severely punished by heavy Mauser volleys which reached it, was forced to withdraw at eleven o'clock to El Pozo, and there remained inactive in battery.

The reforming of the lines was completed during the afternoon with the arrival of the two regiments of Duffield's brigade which came from Aguadores, and was united with those at San Juan.

Facing Aguadores there remained a single regiment in

observation, the attack at that point having resulted in a complete failure, with the loss of but eleven men. Otherwise, there is no change in the order of battle of the infantry, Bates, Kent and Wheeler exchanging all day volleys with the enemy. As to Lawton, his left wing only took part in the fight, the balance of his force being at too great a distance to get into action.

The firing had such serious effect on the assailants that they could not advance a step, and after a day of continuous fighting came the prospect of a second night of suffering. Both adversaries in their positions without shelter tents, in the trenches, flooded by a torrent of rain.

At headquarters there commenced a serious discussion of retreat. Shafter manifested his despair over the situation, but, nevertheless opposes and does not order it.

On the morning of the third of July the firing is renewed, but realizing the impossibility of attack, with the forces at his disposal and fearing that his troops cannot continue to hold their positions under the incessant fire of the enemy, it was decided to enter into negotiations, and near one o'clock in the afternoon the white flag was ordered displayed.

The Spaniards had thus succeeded, in spite of their enormous inferiority in numbers, in holding their entire main line of defense and resisted completely the opposing American corps.

We resume, briefly, our impression of the engagements which took place around Santiago.

With eight thousand combatants, who were not reinforced until the afternoon of the third by the forces of General Escario, with 2700 men, General Linares found himself obliged to defend the ancient forts at the entrance of the harbor, against the American squadron and at the same time to fight, on the outskirts of the place, against the forces of General Shafter, which numbered 18,000 men.

Nothing could be more brilliant than these contests, in which the Spanish forces could logically expect no more than to check their adversaries.

At El Caney, 500 men resisted for a whole day 6500 Americans, supported by a battery and caused them 700 casualties.

At San Juan, 1200 Spaniards, with some artillery, checked 8000 men supported by batteries and inflicted on them 800 casualties, in a fight which continued eight hours.

Finally, on the second and third of July there remained with Linares, after deducting the forces required to garrison the forts of El Morro, Socapa, Estrella, and Aguadores but 5500 men, and in face of all this, Shafter's united army found itself forced to stop and fortify, losing 200 men in the operation. And the American corps, it should be borne in mind, was not made up of men recruited in a hurry and in any manner. There were but 3500 volunteers in its ranks; the balance were soldiers of the Regular army, genuine soldiers, well organized, well trained and well selected, veterans who for many years had fought the Indians.

The regiments of volunteers which were with them, were incapable of holding against the Spaniards. In proof of this, at Aguadores, the attack of Duffield, whose brigade was made up entirely of volunteers, was totally repulsed. In the same manner, at San Juan, the 71st New York was held in the trail at El Pozo, in front of the heights, and forced to remain without advancing a step, notwithstanding all that has been said to the contrary in the American newspapers. I saw them and passed in front of them.

Finally, at El Caney, the 2d Massachusetts, which was under command of Ludlow, refused to follow the movement, after suffering the effects of the first discharges.

All of these troops stubbornly refused to advance after observing the effect in their ranks caused by the Spanish bullets.

There was but one volunteer regiment, the 1st United States Volunteers (Rough Riders) which took any serious part in the action; but this was composed of adventurers of all nations, fearless men, and are not to be compared except to a "foreign legion."

Consequently, the volunteers gave way in all parts of the field to the Spaniards, and the old regular American regiments had hard work, as I said, in dislodging from their positions their tenacious defenders. Thus it is, that the Spanish troops fought against an adversary, hardy and courageous. So, also,

have they upheld and known how to preserve the honor of the Royal ensign.

Gather, then, with me all you noble hearts which beat in the valleys of the Ebro and in the mountains of Sierra Morena, branches of green laurels, and deck with them the tombs of the brave who sleep the eternal sleep in those lands so far from their beloved country, where its cradles are rocked by beloved hands!

Crown with them the heroes who return disabled by sickness, fatigue and bullets, for they are great in their misfortune! The least that can be said of such men is that with heroic resistance, in the midst of such trials, they have known how to save the honor of Spain.—(From the *Boletín Militar*, Bogotá.)

TRANSLATOR'S NOTES.

While Captain Wester considers that the American troops met foemen worthy of their steel, his deductions cannot be accepted as conclusive.

Accurate personal observations under the circumstances, might well be considered difficult, when covering movements over a broken, obstructed and unknown terrain of considerable extent, and offensive operations over such, against a carefully intrenched, well supplied enemy, fighting on their own selected ground, with ranges marked, in their own climate, is an undertaking which has its embarrassments.

His criticism that Duffield's brigade was repulsed at Aguadores would tend to show that he has not grasped General Shafter's plan of campaign. The movement against Aguadores was a feint to hold its defenders from joining the Spanish main body and fully accomplished its purpose.

Captain Wester does not seem to consider what influence the fact that the artillery, as well as the volunteer regiments (except the Rough Riders) had for use only black powder with its consequent exposing heavy smoke (and the volunteers' inferior weapons), may have had in their tactical handling on the field.

The display of the white flag by the Americans need not necessarily have meant that they should be damned for first crying hold, enough. Its result certainly was that the Ameri-

cans proceeded to possess themselves of the Spanish colors, arms and persons.

It is doubtful if the "Rough Riders" can properly be called a "foreign legion." That regiment was made up of cowpunchers and clubmen, deputy-sheriffs and doctors, miners and millionaires, but all Americans and a collection of Americans, in the truest sense of the word.

The article, originally in Swedish, was translated into Spanish in Spanish-America, where blood is thicker than water. Its closing paragraphs seem to possess a familiar sound and hazily recall to the translator's memory the ring of tropical banquet orations.

But all honor to the brave, under whatsoever flag they fight.

E. E. B.

THE TRAINING OF INFANTRY FOR ATTACK.

BY MAJOR C. B. MAYNE, R. E.

(From *The United Service Magazine*.)

LIEUT.-COLONEL HENDERSON'S valuable paper on the above subject in the August issue of the *United Service Magazine* is well timed, and full of food for thought and reflection. He points out that the system that made the Light Brigade famous during the Peninsular War owed its success to the following causes: *

1. The physical training of the soldier.
2. The careful instruction of the individual skirmisher.
3. Practice as light infantry [*i. e.*, as skirmishers] over difficult ground.
4. Correct habits of command instilled into the regimental officers, and the training of their judgment.

Colonel Henderson then proceeds to say: "It should never be forgotten that on such ground [*i. e.*, at Shorncliffe Camp] as

* The order given by Lieut.-Colonel Henderson is changed here. It may be also remarked that this list does not exhaust the number of contributory causes to success.

was available near an ordinary English station, Sir John Moore's command was so trained that in a far more difficult country, a country of rocks and ravines, of lofty precipices and barren uplands, neither officers nor men were ever caught at a disadvantage. * * * The secret of its [*i. e.*, the Light Brigade] efficiency lay, not so much in the constant exercise on the green downs by Cæsar's Camp, in physical training, and in the careful instruction of the individual skirmishers, as in the inculcating of correct habits of command in the regimental officers. * * * Their most marked characteristics were that when they were left alone they almost invariably did the right thing; that they had no hesitation in assuming responsibility; that they could handle their regiments and companies, if necessary, as independent units; and that they consistently applied the great principle of mutual support. It seems perfectly clear, therefore, that Sir John Moore and the colonels of the Light Brigade intended, when they instituted their system of discipline, of instruction, and of command, to form in the persons of their company officers a body of intelligent and zealous assistants, capable of carrying out their plans and anticipating their wishes; and not merely a body of docile subordinates capable of obeying orders to the letter, but untrained to resolute initiative." Colonel Henderson then points out that the Drill-book is also clear on this point.

Nowadays great attention is being paid to the physical training of the soldier; but the amount of instruction given to the individual skirmisher, and to the practising of infantry as skirmishers over difficult ground, varies very greatly in different battalions. It is probable that but little progress will be made in these respects until we have an Inspector-General of infantry. If the cavalry and artillery require such inspectors, far more so do the infantry on whom the brunt of battle falls. Sir George White, in his farewell order to the army in India, said: "I consider that the efficiency and discipline of all arms in India have reached a high standard, but the uniformity of training, which is so marked in the case of cavalry and artillery, is still wanting in the infantry, and careful teaching in time of peace is still required." Uniformity of training can only be assured when there is uniformity of inspections and uniformity in the

ideas of the inspectors. To show the necessity for clear teaching on the methods to be made use of by infantry, the following quotations from two letters—one from a well-known officer commanding an infantry battalion, and the other from an equally well-known staff officer—out of many others of a similar nature, are given. “The question of frontage as neglected to be laid down in infantry drill makes matters only vague and difficult for C.O.’s when acting with other troops. * * * I send you my notes for the use of my own battalion on the attack. You see everything is now so very vague and unsatisfactory that C.O.’s must perforce make for themselves rules of some sort.” For this reason most battalions have their own private normal formations. This can be seen at any station. Colonel Henderson objects to such formations, but this point will be referred to later on. But, it may be said, if we have normal formations in fact, why make such a fuss because the Drill-book does not recognize such things? The answer to this is given in the following quotation from the staff officer’s letter. “After a long experience both as a regimental and a staff officer in peace and on service. * * * Part V. (Infantry Drill) is misleading and perplexing in the extreme. Habit is a second nature, and it should be the object in peace to drum into our men what they should do in all circumstances in war; then why not have a standard form for attack laid down that could be modified as required? As it is, everything is chaos, and battalions moving from one command to another have to adopt the ideas, constantly diametrically opposed, of each fresh commander. I remember, when on the staff in India, at an inspection parade, by order of the general, telling a commanding officer of a battalion, just come into his command, to do the attack. He said, ‘which one would the general like? I know or have been taught four.’ Thus with us, a service getting battalions from different commands suddenly brought together for the first time in brigades, etc., such variance is not likely to have a favorable result.” These words were written four years before Sir G. White’s remarks.

Cavalry and artillery have more or less laid down standard battle formations that are capable of modification, and which, far from hampering their effective action, have proved to be the

very means of making their action still more effective by insuring a combined and simultaneous application of force. Their inspector-generals have thus something to go upon to insure uniformity of training and therefore progress. Under present conditions, or rather present ideas as to what the Drill-book means in many places, an Inspector-General of infantry would be puzzled to know on what solid ground he stood, as everything is said to be so vague and misty. Marshal Soult, Wellington's experienced and worthy opponent, writes: "A large number of causes often intervene to upset the best calculations. However, in the long run and in the majority of cases, calculation prevails against chance."

But however much may be gained by the careful instruction of soldiers as skirmishers, individually and collectively, there yet remains the important subjects instilling correct habits of command into regimental officers and of training their judgments. And this will never be adequately assured by any system of training that causes the question to be universally asked after any field manoeuvres, as now invariably happens, "Which side won?" Without the solvent of real shot and shell, it is impossible to say that either side engaged in a mimic battle has "won" or "lost." But when men feel that this unnatural test is to be applied to their actions, subordinate leaders will fear to incur the wrath of their superiors and the blame of any supposed failure. And in this way we tend to train up "a body of docile subordinates capable of obeying orders to the letter, but untrained to resolute initiative." In peace manoeuvres and in war games let the expressions "winning" and "losing" be absolutely prohibited, and let the sole test be, "Did So-and-so do the right thing with the information he possessed and the means he had available to act on it?"—imaginary troops being, if necessary, unexpectedly introduced, as may often happen in war, to create a crisis or difficult case. Under such a system, officers of all ranks will soon learn to accept responsibility, have their judgments trained, and obtain correct habits of command.

Another factor that has acted adversely to the progress of the infantry arm is the somewhat injudicious teaching that has been promulgated of late years on the subject of "taking the

initiative." From the way the word "initiative" is used, it is made to include offensive spirit, laying down the law to the enemy, forming a judgment, accepting responsibility, etc. And on every side we hear preached "take the initiative," or "act on the initiative," but without any attempt being made at the same time to define what the term "initiative" means or what are the limits within which it is to be exercised. All this injudicious teaching has led to a good deal of go-as-you-please tactics, ending in abuses and censures all round until officers, who have also an idea that it is essential to "win" in our usual hurried and unreal mimic warfare, refuse to have anything to do with such a dangerous thing as an initiative that only brings on them so much abuse and censure.* Not long ago, in some manoeuvres in England, a strongly intrenched and manned position was attacked by six battalions spread out in one long line of a mile and a half in length, but without a single support or reserve in rear of it! Yet the attacking force was commanded by a general of repute, but the "initiative" of his subordinate leaders had taken the whole affair out of his hands at an early period of the day. In the case of large bodies of cavalry or of artillery there is practically little or no independent acting on the initiative by subordinate leaders,† nor can there be if either of these arms want to act unitedly as a whole. What is wanted is that all the units composing a force in action should "work together," whether in Western or Eastern warfare, and this will never be the case so long as battalions have to change their methods of battle training according to the variable opinions of the different commanding officers and generals they success-

* General Von Wright, an Englishman in the German service, who commanded a German cavalry division on the French frontier after the war of 1870-71, was asked by an English friend, who accompanied him during one of his inspection tours, why he found so little fault over tactical dispositions that often appeared wrong. General Von Wright replied that, as no two men would do the same thing in the same way, and yet both might be successful, he was satisfied if he received even, what was to him, only a fairly adequate reason for what was done. He only blamed when no such reason was forthcoming, though he always pointed out his own views as an opinion to be considered. Truly a Daniel come to judgment!

† A distinguished general commenting on this statement said, "Of course not. Nor should there be in the infantry beyond a very small allowance. I rarely permit any."

ively come under, so long as any real or imaginary want of clearness exists in the regulations, and so long as every one is told to act on the initiative in all and every case without first defining the meaning of the term "initiative" and the limits of its application for different ranks. We not only want the units of each arm to work together, but we also want all the arms of the service to work together as well.

The Infantry Drill-book says, "It is essential that every infantry officer should be thoroughly acquainted with the general rules in the cavalry and artillery drill-books; and that they should know the principles governing the employment of the arms, in order to obtain the fullest advantage possible from their own commands."* The Cavalry and Artillery Drill-books say much the same as regards the officers of those arms. This is excellent advice, but more than mere reading and study is required to effect the desirable object stated. Experience is by far the best schoolmaster, and it alone will enable officers to appreciate the requirements, capabilities and difficulties, and also, what is of equal importance, the impossibilities of other arms than their own, and how far the different arms agree and disagree in tactical aims and procedure. Such experience, however, can only be really gained by permitting officers of the different arms to exchange service for a considerable time (say a year) with the other arms of the service, and by holding this experience to be of greater value than any certificates for signalling, meat inspection, veterinary knowledge, etc., for the selection of officers for active service. In war everything is simple in conception, but the simple is difficult in execution, and no one is in a position to criticise unless he personally knows the difficulties of manœuvring a force, and supplying the varied wants of the different arms, and what are the necessary conditions required to enable them to effectually fulfill their proper rôles in war. By constantly working bodies of all arms together much may be done if we first put a curb on "taking the initiative" and keep it within due and proper limits, but the best results of even such a combined employment of all arms can only be secured when the officers of each of the different arms have a personal experimental knowledge

* Sec. 107, para 1.

of the other arms, and not a mere theoretical knowledge only of them. We have regimental instruction, garrison instruction, war games, promotion examinations, etc., but none of these have anything like the value of personal experience.

The foregoing remarks have an important bearing on Colonel Henderson's admirable pleading for the better training of our infantry in skirmishing. The tendency of his views is against mechanical training, and for greater freedom in the exercise of "an intelligent initiative" for all ranks. He has hit the right expression that adequately interprets the Infantry Drill-book (sec. 124, para. 1), and his third, fourth, and thirteenth characteristics of light infantry fighting are very happily stated in the way they keep to the front the idea of units, however small, working together with those alongside of them. Working together with an intelligent initiative is what is wanted, while all independence of action under the influence of a blind unreasoning initiative should be sternly repressed.

Colonel Henderson lays great stress on the training of infantry in skirmishing duties. The very purpose of his paper compelled him to do this. But "fire" is only a means to an end, and that end is the bayonet assault. The ideal of every infantry soldier should be to cross bayonets with the enemy, and this idea is embodied in the assault. The Infantry Drill-book everywhere emphasizes the importance of the assault, and the purpose and object of the preparatory and preliminary fire is to render the decisive assault both feasible and successful. Bayonets may never be crossed, but attempt to do so must nevertheless be made, if victory is to be secured. The final advance in mass with the bayonet is the decisive act of battle. Recognizing this vital fact, we see that something more is required in "the training of infantry for attack" than greater perfection in skirmishing duties, namely, greater perfection in securing that solid backing to the skirmishing line that is to carry out the bayonet assault at the right time and place. We are here speaking of tactical assaults and not of the larger strategical operations on an enemy's flank, that seem to be the usual practice in the German manœuvres of late years.

Thus we have a twofold problem before us—namely, (1) how to best execute the fire preparation, and (2) how to best execute

the bayonet decision. On both these two points very much could be written, but here we can only deal with some of the main factors affecting each of them.

The first thing required is to clearly differentiate between the different duties of the fire preparation and the bayonet decision—that is, between the attack and the assault—and distinctly to allot these specific duties to separate bodies of troops under their own recognized and known leaders. The second thing required is that every leader should have all the reserves he can muster compatible with the duty he has to perform. The Infantry Drill-book rightly lays great stress on this point (sec. III, para. 3, and sec. 117, para. 3), and it is a point that must never be lost sight of in all battle questions. Every leader is more or less working in the dark and does not know what unexpected eventuality may occur at any moment that he may have to meet, and can only meet, with troops as yet unemployed, for troops once deployed and thrust into a fight cannot be extricated, or rather relied on, for other uses. In connection with this question of reserves it should be noted that all reserves should be composed of complete units under their own recognized and known leaders. A complete battalion is worth more than eight companies taken from as many battalions at the last moment to work together. The same remark applies to brigades and higher units.

Recognizing the necessity for reserves and that these reserves should be comprised of complete units, the best way to secure these two requirements is to place the fewest number of battalion units possible in the first line, and to keep the remainder in reserve to form the second, and also the third line when this latter is considered necessary.* And the only way to assure the placing of the fewest battalions possible in the first line, compatible with the duty of fire preparation that they have to perform, is to lay down arbitrarily (as is done in sec. 124, para. 8) the maximum frontage a battalion may take up. The Drill-book rule for the maximum frontage is a good one, and when

* For instance, a brigade hardly requires a third line. The drill-book only suggests (sec. 124, para. 4, and sec. 128, para. 6) a threefold division for troops "when of sufficient strength," and for "large bodies of troops." A brigade hardly comes under either of these descriptions, and if given a threefold division may give the troops a false idea of the backing they have to rely on.

combined with the normal initial formation (also laid down in the Drill-book)* to form the "primary extension" (a Drill-book expression), leaves nothing to be desired for a first line initial battalion attack formation, while it removes all doubt and uncertainty from the minds of battalion commanders as to what they will have to do when ordered to attack. In this case all that a brigade commander has to do is to say how many of his battalions are to form the first line, and then those battalion commanders and all their subordinates know exactly what they have to do as regards the initial formation they have to take up.

That this question of the frontage to be taken up by a battalion is a real difficulty is shown, for example, in the printed instructions on infantry battalion tactics, issued by General Sir Richard Harrison, when in command of the Western District. He says, "Great care must be taken by every commander, whether of a division, a brigade, or a battalion, that no troops under his command are launched into the battle without instructions. First, what they have got to do; second, on what front they have to fight; and third, what is to be the direction of their advance." His instructions constantly refer to the vexed question of frontage, supposed to be a variable and unknown quantity to be settled by the decision of the brigade commander. But General Harrison twice acknowledges that "it will be a help to subordinate commanders to know beforehand on what front it is possible, or at all events usual, for each unit to act," and for this purpose he ordered his battalions to attack on a double company system, and then limited his own orders to "work on a battalion or half-battalion, or quarter-battalion front." By this system he reduced the possible number of battalion frontages and formations to three fixed types, known to all the battalion officers, and which could be taken up without any calculation or hesitancy, so fatal in war. This example is only quoted to show that the frontage question is a real difficulty though, as we hope to show, only one frontage and one initial battle formation is really necessary.

* See sec. 124, paras. 4 and 7, and sec. 126, paras. 7 and 8. To fulfill these definite conditions we must have four companies of a battalion, side by side, forming a firing line and supports (or company reserves) of equal strengths, with the remaining four companies as a battalion reserve.

This frontage difficulty has been created by the assumption that the front of the decisive final tactical assault can be definitely foreseen from the outset of the battle, and that therefore the battalion units occupying the front of assault can be given a smaller frontage in order to secure a greater number of men per yard of front with which to carry out the assault successfully. But, taking another actual example, in the printed instructions on the infantry attack, issued by Major-General Sir W. P. Symons, when in command of the Sirhind District, it is twice admitted that the selection of the front of assault is not always possible at the outset of the fight, but is to be determined as soon as possible. Recognizing this fact, then all that is needed for the first or fire preparation line, is a number of battalions, side by side, each working on the maximum admissible frontage, backed up with as many complete battalions as possible, held in reserve to form the second, and if necessary, the third lines,—or as we would prefer to call them the local, and the general reserves,—to carry out any necessary reinforcing of the first line, the protection of its flanks, and the final decisive assault, when this front of assault has been decided on and effectively prepared by a superior artillery and infantry fire.

Such a system has the advantages of great simplicity and of enabling every one to know exactly what they have to begin to do on their receiving their orders as to the rôle they have to fulfil, and the direction in which they have to advance. Every first line battalion in attack would have a known frontage of about one yard to every two men, and be formed up in the normal initial attack formation laid down in the Drill-book. With a brigade of four battalions in attack, one, one and a half, two or three battalions can form the first line with the remainder in rear as a brigade reserve,—the number of battalions placed in the first line depending on whether the brigade is acting alone, or on the flank of a long line, or in the centre of such a line. With a division of two brigades in attack, one brigade would provide the first line, with any local reserves thought necessary, while the other brigade would form the divisional reserve; a division of three brigades would be better, allowing of two brigades to be placed side by side to form the first line

and the local reserves, with the third brigade forming the divisional general reserve. With an army corps of three divisions in attack, two divisions would be placed side by side to form the first line and the local reserves, leaving the third division to act as the army corps general reserve. In the case of a defense, the only alteration required in any of the above dispositions is the extension of the first line battalion frontages to about one and a half yards to every two men. This would be effected by placing in the firing or skirmishing line three sections of each of the leading companies with one section only in support, because the men in the firing line being under cover will presumably lose less than those in the attack who are advancing more or less in the open, and who are therefore seen. Thus under the proposed system the arrangements for the attack and defense are practically the same, and each leaves entire units in the hands of the chief commander to carry out the assault or counter assault at such place and time as he judges to be best.

It will be seen that the battle organization sketched out above is that laid down in the Drill-book (sec. 128, para. 6; and also sec. 117, paras. 6 and 7) when dealing with the defensive. It is there stated that large bodies of troops are to be divided into three lines. The first or fire preparation line is subdivided into firing line, supports and reserves; the second line, consisting of local reserves, provides for the defenses of the flanks, supports the first line, and carries out attacks of a local nature; the third line carries out the assault, or takes up the pursuit, or covers the retreat. Here the duties of attack and assault are clearly differentiated and allocated to distinct groupings of troops under their own leaders. Further, the duties thus allotted to the second line are of a more rational nature than those laid down for the second line in attack. These latter are apparently based on the assumption that the single line of battalions forming the attacking first line, can by itself, and without further aid, reach the decisive ranges and prepare the way for the assault (sec. 114, para. 4; sec. 115, para. 1, and sec. 124, para. 4). The question is whether this assumption is one that can be relied on in war. The verdict of history is undoubtedly against it, for all experience shows that

the first line should always have local reserves in the rear of it, and especially so behind those parts distant from the front of assault and at the time when the assault is made, because this "event" practically uses up the most tactically important portion of the troops kept behind the first line. The duties assigned in the Drill-book to the second and third lines in the attack are found by many to be very confusing. The second line, which is to carry out the assault, is to be formed by gathering together a heterogeneous mass of units, called together from various brigades and divisions, thereby breaking up the higher organized tactical units, which in case of a reverse would add to the confusion, and leave the first line for most of its length without adequate support in rear at the most critical stage of the battle. The third line in attack, composed of one-fifth of the whole force, is to act as a more or less stationary defensive body behind prepared positions, which it only is to leave when the troops in front are successful or when a retreat is compulsory (sec. 111, para. 2, and sec. 124, para. 4). The authorized strength of the third line forms an excessively large proportion of the total force to remove from active participation in the attack or assault, and which is ordered to be kept back to stand on the defensive while the other troops are moving forward.

The Drill-book states (sec. 107, para. 3) that the original offensive and defensive attitudes originally taken up by two opposing forces may be reversed during battle, and yet two entirely different battle organizations are laid down for the offensive and the defensive, with different rôles assigned to their different component parts. But, from what has been already stated, we see that it is possible to adopt one universal but flexible system of battle organization, with the same recognized duties for each of the component parts, and which differs in the offensive and defensive in the proportionate strength only of the firing line and its supports in the first line. Such a system affords the utmost simplicity and lets every one know his rôle and duty from the outset, while being equally applicable to the offensive and defensive and to any reversal of these attitudes during a battle. In these matters it stands in strong contrast to the present double system with its felt uncertainties on many vital points.

A minor point of improvement may be made in our military terminology. As the word "line" is no longer applicable in its true sense, except to the first line, which is really a line of battalions placed side by side, it would seem best to drop the use of the terms second and third lines. Also the word "supports" might be replaced by "company reserve." Consequently the following battle terminology might be suggested for use.

1. The fire preparation line of battalions formed up side by side, in a normal "initial" formation of firing line, company reserves and battalion reserves, with the duties of disorganizing and demoralizing the enemy at as close ranges as is possible or advisable.

2. Local reserves of complete units with the duties of warding off local flank attacks, supporting and reinforcing the fire preparation line, and, as the case may be, resisting or carrying out attacks of a local character.

3. A general reserve of complete units with the duties of carrying out the assault or counter assault, taking up the pursuit, or covering a retreat—the unused local reserves serving as a first rallying-point in case of a reverse while the local reserves nearest to the front of assault would join with the general reserve when the latter carries out the assault.

A few words are necessary relative to the question of normal battle formations. The Infantry Drill-book forbids in sec. 124 any "standard form of attack formation," adding the qualifying words, "Fixed rules cannot be laid down beforehand for movements in presence of, and action against, an enemy, as these movements must vary according to the circumstances of each situation which must arise. * * * It is for these reasons that it is not considered desirable to formulate any normal system of attack. It would be impossible to provide for all contingencies, and there is the danger of a standard form of attack being applied to cases for which it is unsuitable." Here we see that the expression "standard form of attack formation" applies to the tactical procedures adopted during the entire course of an action and not to the initial disposition of units to be taken up at the outset of the fight. It is this initial disposition alone that has been referred to in the foregoing

pages as the normal battle formation here advocated for general adoption for the majority of cases that can occur. And let it be noted that this initial normal battle formation is independent of what may occur subsequently and is fully capable of being modified to suit special cases. And further such an initial normal battle formation is actually laid down in the Drill-book (sec. 124, paras. 4, 7, and 8, and sec. 126, paras. 7 and 8). The general idea is that nothing has been ordered in the matter, with the result that every commander invents his own battle formation and practises it until it becomes, for his command, a fixed type. We are such blind copyists of the Germans* that when a craze for no formations arose among them many English writers adopted it without considering that the whole environment of their training is entirely different from ours, and that they have vastly greater facilities for the practical training of their officers and men than we have. But those who have studied Von Löbell's annual reports for the past few years cannot but have been struck by the growing demand in Germany for a more regular organization of the battlefield, entailing a return, among other things, to an initial normal battle formation for battalion units. Many prominent German military writers are strongly protesting against the go-as-you-please school of thought. When a force deploys in front of an enemy in position, very little is known or can be known concerning his strength and dispositions. The only thing to be done is to deploy a strong fire preparation line and to hold all the remaining troops in reserve in order to keep that line fed up to efficient strength and to carry out the assault. Reinforcing is only a term expressing the need of passing relatively unexhausted men across a fire-swept zone to feed and carry forward a more or less relatively exhausted line. But this firing line may, in the vast majority of cases, be initially organized on a recognized pattern, capable of being modified according to the developments that may subsequently arise. The boxer and the fencer, whatever they may do afterwards, both assume at

* The last writings of Hoenig and other German military writers have shown us that in many military matters the Germans are far from being infallible guides. We have our own military records and aptitudes that cannot be surpassed by any other nation.

the outset a "normal" attitude that experience shows to be the best to begin with. The adoption of an initial normal battle formation is one of the most powerful means of introducing order and control into, and of eliminating confusion and uncertainty from, a condition of things naturally tending to confusion from the very outset—viz., the battle, with the uncertainties and dangers that surround it.

In this short sketch many things bearing on the question of infantry in the attack have of necessity been omitted, such as the cavalry and artillery coöperation in reconnaissance and fire preparation, the deployment of the various arms and units, the supply of ammunition, etc. But enough has been said for the present on the subject of making the best preparation possible for the execution of the decisive bayonet assault and for keeping the fire preparation line fed up to an efficient strength. We will now pass to the subject of the best means of securing an efficient fire preparation on the part of the infantry. On this point sec. 58, paras. 1 and 2, and sec. 125 of the Infantry Drill-book should be studied. The smallest organized infantry unit is the subsection, or, if that is too small, the section, each under a non-commissioned officer. The officers direct the fire, the sectional commanders control the fire, while from the men fire-discipline is expected.

Fire direction, control, and discipline are three distinct duties of equal importance, but under the influence of peace conditions the importance of the first two of them but too often become lost sight of. For want of a proper connection between ball practices and ordinary drill and tactical manœuvres, and of a proper amount of firing with ball ammunition under field conditions, our officers and N.C.O.'s are not sufficiently accustomed to the fact that they can rarely see in war any immediate visible results from their firing, and hence they tend to become disheartened and careless when they do not see any of the visible results that they unreasonably expect to see.* Our range practices—the usual and almost only imitation of battle-firing that

* Extract from a letter written by a prominent general, who commanded a brigade in the late Tirah expedition: "In Tirah I heard a major of a British infantry regiment shout out, 'Fire away, men; fire anywhere; keep up your fire.' Result, a roar of fire, at nothing, into the wide, wide world, that got for a time out of all control."

our men are trained to—instil a totally false idea into our officers, N.C.O.'s and men as to what war conditions are, and so, when these war conditions come, they are at first apt to become confused or careless as to the use of infantry fire. Among some of the wise things that the Germans have done in the provision, in most of their army corps areas, of large areas of ground over which artillery and infantry can fire with real shells and bullets at prepared positions. It would astonish most English officers if they knew how much the Germans have spent and done in this direction. In this way German officers and men get more or less accustomed to the conditions of field warfare as far as the absence of a real enemy will permit. This wise preparation is much wanted in our army for the infantry, who are as greatly, if not more, in need of extensive field-firing grounds like the artillery have at Okehampton and other places—areas over which infantry and artillery can roam and fire real shot and shell at will for a week or more on end, and not for two or three hours only once a year, if as often as that. Our artillery has vastly benefitted by its annual three weeks' outings on its practice grounds, and so would our infantry, the backbone of our army, if they had the same chance.

The rifle is an implement, not merely for projecting a bullet, but for hitting a distant enemy with a bullet. The first essential for an infantry soldier is to hit a distant enemy with a bullet; the second essential is to hit, and the third essential is also to hit in the same way. Again we must remember that the modern rifle is not designed for long range and rapid firing but for rapid loading and an effective fire at 500 yards and under. It can be used for longer ranges and for rapid firing, and may be so used when favorable circumstances demand, but these are the accidental uses of the rifle and not its primary uses. Further we must remember that the best rifle is of no value unless it is used by a man trained to its use, and then only so long as he retains his coolness and judgment. Hence the importance of the use of such cover as will expose as few men as possible to be hit, provided that the primary essential of fire effect is not interfered with. Thus while we want our men to hit a distant enemy, we also want them to advance to shorter and more effective ranges, to make all proper use of cover while

doing so, and to retain their coolness and judgment in order to make the best tactical use of their fire.

To hit a distant enemy with a rifle bullet requires, apart from any skill in the use of the rifle, a knowledge, not of the range only, but also of the backsight elevation required for the range. This fact is by no means well known. The engraved backsight elevations are only approximate indications of the backsight elevations required for certain horizontal ranges for a grim atmospheric density, and for a still air. If the range is inclined (as it usually is in war) and if the atmospheric density changes (as always happens) and if a wind is blowing, then the engraved backsight elevations have to be frequently widely departed from for given ranges. This is a most frequent source of error in the field, and, when combined with the want of exact knowledge of the ranges and the difficulty of seeing the objectives to be fired at (a difficulty greatly increased by the use of smokeless powder) causes an enormous waste of valuable ammunition. Something may be done to reduce this waste by the use of handy infantry range finders carrying their own bases (like the mattock range finders, which unfortunately is too expensive for general use) and improved optical glasses, but more can be done by giving infantry, if even only those who are serving abroad where the facilities are greater, increased opportunities for an efficient and prolonged course of field firing under something like field conditions.

To direct and control the fire of infantry, to insure the greatest efficacy possible, to maintain fire discipline, to insure the best tactical use of the fire, to insure the men moving forward when required and in the right direction, to see that they make the best use of all available cover, and to maintain the necessary coolness required for an effective fire, it is essential that the subsectional grouping of infantry be fully made use of. The subsection * is the infantry fire unit, just as the battery is the artillery fire unit, and should therefore never be voluntarily broken up. And it may be here suggested that infantry have much to learn from artillery in the matter of the effective use of rifle fire. At first sight one might imagine that, with a gun, firing from a carriage and with a shell whose burst can be seen,

* Or the section, if the subsection happens to be too small.

the artillery weapon is preëminently suited to the use of an independent fire in which each gun commander would choose his own target. But experience has proved that the exact reverse is the case, and if this be so for the artillery, with their apparently favorable conditions, still more so must it be for infantry who fire from a yielding shoulder and who can rarely see where their bullets fall. Every man in a subsection should take a personal interest both in the fire of the other men in his subsection and in the fire of the subsection as a whole. And further, just as the guns of a battery fire one after another, so should the adjacent subsections belonging to a company fire one after another in regular order, at all events until the 500 yards range is reached.* This will insure a very excellent control being maintained for a considerable time over the firing line, enable the effects of the fire at the longer ranges to be carefully watched and corrected when necessary, allow of an intelligent choice of tactical objections being made, and facilitate starting and controlling any required forward movement of the firing line, while also giving facilities for the essential working together of the various subsections that Colonel Henderson so rightly lays stress on. It may be further added that such a procedure is admirably adapted to insuring, for a considerable time, an efficient and correct reinforcing of the firing line with the least amount of resulting confusion, as is compatible with the circumstances of the case. The longer we can maintain order and stave off disorder the better will the ultimate result be. As soon as reinforcing a filled-up firing line begins, it is a sign that the firing line is suffering losses or becoming exhausted, and from that moment more or less confusion begins to be felt in the firing line, and hence anything that will tend to minimize and delay this inevitable confusion should be welcomed. It is as important to train men into habits of reinforcing and of advancing when reinforced as into habits of firing under all conditions.

We may even go further in this matter of keeping control

* Many things are possible at the longer ranges that cannot be even attempted at the shorter ranges, supposing the enemy's fire to be reasonably effective. Consequently the possibilities of the various "distance zones" must be borne in mind in the consideration of battle tactics.

over a firing line so as to make all its component elements work together. An Army Order issued in India in 1888 says "The concentration of fire by a particular group or section is only a step in the right direction, being but one degree removed from uncontrolled fire. It is the direction of fire on one portion of the position, undertaken by widely separated units, which constitutes the true essential of concentrated fire." We have already referred to the advantage of the subsections of a company firing in regular succession from the right or left of the company. This will enable the company fire to be easily directed. But as company commanders will be more or less engrossed with what is going on in their immediate front, it will be advantageous, so long as it is possible, to have a senior officer in the firing line, specially detached to take a more general view of the situation, to direct the fire of the whole battalion on any named tactical objective when necessary, to warn the company commanders in the firing line, how they can assist one another or neighboring battalions, and to regulate the advance. If the officers and men are properly trained to such a system, a general control over a long firing line can be profitably exercised in action up to a certain point, depending upon the efficacy of the enemy's fire, and up to that point an officer should be in general command of the firing line of each 1st line battalion. It cannot but be a tremendous advantage, and therefore power, to be able to direct, if even at the longer ranges only, the whole fire of a battalion to the right or left, as ordered, on any objective that may suddenly and unexpectedly become tactically dangerous.

As has been already pointed out, the conditions existing in battle at the longer and the shorter ranges are very different. We expect "order" at the longer ranges and "disorder" at the shorter ones, but the change from "order" to "disorder" is, or should be, a gradual process. As the enemy's efforts will be directed to disorganize (disorder) and demoralize our organized units and disciplined men, we should deliberately endeavor both to delay the period of disorder and to minimize its effects when it does arrive. The longer that control (that is "order") can be maintained, the better the ultimate result will be, that is the greater will be the result of any success and the less will be the result of any reverse. Consequently, the suggestions that have

already been offered for the conduct of an attack have in view the principle of enabling a battalion commander to retain control over his battalion as a whole, for as long a period as the enemy's fire will permit of it. However there must, in ordinary cases, come a period when the battalion commander's control practically ceases, and the further movements of the firing line, apart from the reinforcements that it receives from the rear, depends on the company officers in the firing line; but it must always be desirable to make the point where this occurs as near to the enemy as is possible in every case.

Another question in connection with the reinforcing of an exhausted firing line is whether, in order to maintain a vigorous offensive and to minimize useless losses, it will not be advantageous to order the exhausted reinforced men to remain behind on a fresh advance being made, until such time as they can get pulled together again, been rested and have their pouches refilled with ammunition, and then, after awhile, to be sent forward again as new reinforcements? There can be no advantage in keeping a number of exhausted men in the firing line during the attack period, as they are used up and most of their ammunition is gone, and they only cause the attacking firing line to become overcrowded and unduly mixed up, offering thus a better target to the enemy, hampering the freedom of the advances, and producing more disorder than need be, and tending to dampen the energy of the newly arrived reinforcements. If the reinforced or exhausted men are trained in peacetime to the habit of falling out of the firing line under orders, and then of advancing again after a time, neither the efficacy of the fire of the firing line nor the vigor of its advances would be affected in any way, while they will afford valuable assistance later on, after a rest, as can be seen from the accounts of Skobeleff's attacks on Plevna, where he forced his way into the Turkish intrenchments with the aid of the stragglers that he collected and sent forward as fresh reserves. If every reinforcement is imbued with the idea in peace-time that it has to carry the firing line some distance further on than it has already reached, there will be no mixing of the fresh with the exhausted men, as the latter will be left behind. Any such forward movement of a part of the firing line will invariably draw the adjacent parts

along with it. Of course, the foregoing remarks are not meant to apply to the front of assault when once the assault has been launched forward. In this case every man and unit in the vicinity of the assault must move forward with it. In fact, it is a question whether the whole front of attack should not move forward at that time to some extent in order to tie down any of the enemy's reserves and so prevent their being used for a counter assault.

The system that has been sketched out above completely fits in with the views advanced by Colonel Henderson. But, while embracing these views, it offers a wider view of the whole situation and affords a reasoned and orderly advance, propelled by an intelligent initiative, with a specific allotment of different duties to distend units, and backed up by adequate reserves placed in hands of every commander of the military hierarchy, according to the rôle that he has to play in the great drama of the battle. On account of the confusion and friction involved in all military manœuvres, even in peace-time, it is of the utmost importance to aim at simplicity in all things, so that every man may know from the outset, as far as possible, what he has to do, and that his peace-training has fitted him to do it without hesitation or unnecessary confusion. And it has been the aim of this paper to show how this simplicity and previous knowledge can be easily and surely attained with the means and regulations that we now have, and that if any alterations are required in our regulations they lie rather in eliminations than in additions.

MARINE OFFICERS' GRIEVANCES.

(From the Army and Navy Gazette.)

THAT the complaints of the marine officers are not without foundation must be patent to our readers, since we have during the past year discussed the matter at some length, and have allowed full expression of their views to members of the corps who are well qualified to speak on behalf of their brother officers. If the discontent which exists in the marine corps can be allayed without loss of naval efficiency nobody

will be more pleased than ourselves. This is indeed the problem to be solved, but, so far as we can gather from recent letters to the press, there is danger lest in their zeal for redress the spokesmen of the marine officers should mislead the public on the issue. It is essential to remember that the grievances are not shared by the rank and file of the marine corps; they have complaints of their own doubtless, but these are not just now to the fore. In saying this we do not for one moment mean that the men would not be just as delighted as their officers if they could be employed in South Africa, but this is a feeling shared by everyone in the naval and military services. If, too, it were true that the Admiralty had despatched to South Africa large numbers of bluejackets for landing purposes, the marines would certainly have reason for discontent, but the seamen have merely been sent out for the ships, and to fill vacancies in the squadron. On the general question of employing a marine battalion, Mr. Goschen's explanation should be sufficient for any but the wilfully blind.

We have already pointed out in these columns what we believe to be at the bottom of the grievances of the marine officers. It is, as Mr. Arnold-Forster has put it, that they obtain "the fewest possible opportunities of performing the more interesting duties of soldiers," and we can quite believe that a very large number of the best and most energetic officers in the corps feel this limitation of the scope of their work very keenly. But we know, too, that these officers share with us the regret we have expressed that statements should have been published which have a tendency to breed bad blood between themselves and their brethren of the navy. It is because we feel sure that nothing is more certain to delay the redress of those grievances which have a solid foundation than the publication of distorted facts and misleading assertions that we have protested against the charges which have been recently made. It might be supposed, for example, after reading the letters of Sir John Colomb, that the landing of mixed bodies of seamen and marines under naval officers was an innovation, and that, on the contrary, the usual custom has been to employ marines alone under their own officers. Nothing could be further from the truth, and to speak of "the growing practice" of landing naval officers and seamen

for military operations is to distort facts. There never was a time in the history of the navy when it was not the practice to land naval officers with seamen, and it is very significant that it was only when the navy had been allowed to fall into a state of dangerous weakness that the Admiralty of the day were persuaded into allowing battalions of marines to be used in the manner which Sir John Colomb desires to see revived. Surely, too, it is a misstatement to say, as he does in the letter which we publish elsewhere, that "the State pays for elaborately training marine officers and men for land warfare, the sea training is superadded." The end and aim of the training of a marine is to make him a useful member of the sea service, otherwise it is money thrown away ; for it is because of his sea training, or mainly because of that training, that he is so much more valuable than the infantryman and artilleryman of the land forces. And this training, it should not be forgotten, he gets almost altogether under naval officers and in company with the bluejackets.

It is unfortunate in the public interest that at present the only openings for the exercise of the marine officer's ability and energy should lie in land service. There is no future for him seaward, and thus it is natural to find him advocating and supporting the garrisoning of the coaling stations with the men of his corps, or their employment in brigades or battalions in the campaigns in which we are so often engaged. But because it would be to the advantage of the marine officer that a certain proposal should be carried out, it by no means follows, as is frequently assumed, that it would also be for the benefit of the State. It is a fact to be taken into consideration also that the marine himself, whether of the artillery or infantry, is by no means so eager to be "bossed" by his officer as his officer is to have the "bossing" of him. Sir John Colomb asserts that it is impossible to sneer at any attribute of which one may be proud. He is doubtless proud of having been a marine officer, but let him ask a bluejacket for his opinion on the subject, and he will learn differently. Of course, prejudice is responsible for the bluejacket's views, but then may it not have been prejudice which inspired Major Plumbe's references to "the same old naval game," and was it not prejudice which led Sir John him-

self to forget when he wrote of the midshipman who was killed at Grapan, that there was only a difference of three or four years in the age of "this water-trained schoolboy" and that of the captain of marines who fell on the same battle-field? It is by no means certain either that in a tight place the marines would not prefer to be led by sea officers, even if they were only midshipmen. This circumstance is not the least among the many which make the problem of how to improve the career of the marine officer a difficult one to solve. There is a close similarity between this problem and that which concerns the Royal Naval Engineers. And the friends of the marine officers will do well to take a lesson from the unsatisfactory ending of the engineer's agitation, which was largely due to the ill-considered course which one of its advocates took in the *Morning Post*. It will not tend to the comfort and contentment of marine officers to create dissension between them and their messmates, nor can it add to the efficiency of the navy or the advantage of the State to encourage the idea that a marine officer should regard the seaward side of his profession as a drudgery and a nuisance to be shirked.

REPORT OF A SPECIAL COMMISSION SENT TO
THE PHILIPPINES BY THE JOHNS HOPKINS
UNIVERSITY TO INVESTIGATE THE PREVA-
LENT DISEASES OF THE ISLANDS.

BY PROFESSOR S. FLEXNER, M. D., AND PROFESSOR L. F. BARKER, M. D.

(From the Johns Hopkins University Circulars.)

REPORT UPON AN EXPEDITION SENT BY THE JOHNS HOPKINS
UNIVERSITY TO INVESTIGATE THE PREVALENT
DISEASES IN THE PHILIPPINES.

TO PRESIDENT GILMAN, DOCTORS WELCH AND OSLER,
Philippine Committee of the Johns Hopkins Univer-
sity Medical School.

GENTLEMEN:—We have the honor to submit to you a brief account of our work and movements in carrying out your commission to study the prevalent diseases in the Philippine Archipelago. Your commissioners, consisting of Dr. Simon Flexner

and Dr. L. F. Barker, to whom were voluntarily attached Messrs. J. M. Flint and F. P. Gay, of the Medical School, the latter having given their time and paid all their own expenses, sailed from Vancouver on March 29th, 1899, and arrived in Manila May 4th, where they immediately established themselves for the purpose of the work mentioned. Owing to the military situation it was found impracticable to visit other ports in the Archipelago or to penetrate into the interior of the Island of Luzon. The entire time, therefore, of the commission was spent in the study of disease existing among the natives and American troops in Manila and at Cavité.

WORK IN JAPAN AND HONG KONG.

As transport sailings were uncertain and the passage out by them slow, it was decided to save time and go by fast steamer, the Canadian Pacific Railway giving especial rates to the commission on tickets around the world.

The original plan of your commissioners was to proceed directly to Manila by way of Hong Kong, at which latter port it was intended to stop only long enough to outfit for the tropics and to catch the earliest steamer sailing for Manila. After consideration of the probability that certain new kinds or phases of disease, not occurring in temperate regions, might be encountered in the Archipelago, and of the fact that the diseases of the Philippines would probably have much in common with those of Japan, it was decided to spend one week in Japan, where modern hospitals could be visited and advantage taken of the results of the study of tropical disease by highly trained and eminent Japanese physicians. The decision proved to be valuable in many ways; and we especially desire to express our obligations to Professors Aoyama, Mitsukuri, Miura and Kitasato, who showed us many courtesies. The opportunity to see in the Japanese hospitals pure and mixed examples of beri-beri assisted us greatly in our subsequent studies, as did also the observations on dysentery made in the Institute for Infectious Diseases at Tokio.

While outfitting at Hong-Kong we improved the opportunity to study the bubonic plague, which was still prevailing at that port. This study was made easy by the generosity and courtesy

of the English civil physician, Dr. James Lowson, in charge of the plague hospital and mortuary. The study began in this way was extended when two months later we returned to Hong-Kong, *en route* to America. At this time a considerable exacerbation of the disease had taken place, and within a week or ten days we saw several scores of cases and performed many autopsies. The several forms of infection : inguinal ; axillary ; tonsillar and cervical and pulmonary, were thus encountered. Bacteriological examinations were made and tissues collected for future study. Two of the party (Dr. Barker and Mr. Flint) spent on the return journey three weeks (at their own expense) in India, where the great epidemics of plague there raging were observed.

ARRIVAL IN MANILA.

Immediately upon our arrival in Manila quarters were sought at the "Hotel de Oriente." Very insufficient accommodations were secured for a limited time, as the sudden accession of families of army and naval officers had strained the hotel to its fullest capacity. Having been forewarned of the conditions of living in Manila, we took the precaution to bring with us from Hong-Kong a group of Chinese servants, intending to set up housekeeping if practicable. After much difficulty a small house was secured in San Miguel, where, by hiring parts of the furnishings and buying what could not be rented, a temporary establishment was secured.

Within a few hours after our arrival the credentials and private letters brought were presented to Colonel Woodhull, Surgeon-in-chief to the 8th Army Corps and to General Otis. Colonel Woodhull afforded us every opportunity to prosecute our work in the military hospitals. Although no special introduction was in our possession, we quickly met Dr. Bourne, chief health officer of Manila, who opened to us the hospitals under his charge. Somewhat later we met Dr. Pearson, Chief Naval Surgeon, who opened the Naval Hospital at Cavité to us.

HOSPITALS IN MANILA.

Civil Hospitals.—These consist of a large hospital within the walled city, *San Juan de Dios*. It has a capacity of from 250 to 300 beds and accommodated during our stay both natives

and Europeans. The number of European patients was small. When the military hospitals were much crowded a certain number of wounded prisoners of war were accommodated. The hospital contained chiefly native medical cases of both sexes. The *San Lazaro* or leper hospital, in the outskirts of Manila, contained from 80 to 100 lepers during our stay. These had come from Luzon, almost exclusively from Manila and its immediate surroundings. The two sexes are provided for in separate, large and airy wards. One wing of the building, having a private entrance, is devoted to native prostitutes who apply regularly for examination and are incarcerated here and treated medically when found to be suffering from venereal disease.

Military Hospitals.—These consisted, beside the regimental hospitals which were virtually detention camps, and three reserve hospitals—the 1st, 2d and 3d reserve hospitals; a convalescent hospital on Corregidor Island and the hospital ship *Relief*, which was anchored in the bay. The first reserve hospital, under the control of Major Crosby, had been originally the Spanish military hospital. It had been from time to time, by the erection of tents over platforms raised a foot or two from the ground, increased in capacity until in July it contained 1200 or more beds. The second reserve hospital, under the control of Major Keefer, was a transformed modern school building and because of its limited capacity (250 beds), high ceilings and wide corridors it made a model hospital. The third Reserve hospital had just been established towards the end of our visit and was smaller than the others and intended as a convalescent hospital. The hospital at Corregidor is a temporary structure and intended for convalescents. It is especially well adapted for its purpose because of the high and hilly character of the island and its complete investment by the sea. The *Relief* was used as a hospital for acute cases; but some time before we left the acute cases were transferred to the reserve hospitals and the *Relief* sailed for San Francisco with invalided men.

The reserve hospitals accommodated especially American sick and wounded; but a ward in the first reserve hospital was set aside for the Filipino wounded.

After the outbreak of beri-beri at Cavit  a hospital under military control was established at San Roque in the remains of the Spanish Marine Hospital which had been wrecked by the insurgents.

Naval Hospital.—A small hospital for sick seamen and marines was established at Cavit . Through the courtesy of Dr. Pearson this was open to us for clinical studies.

Clinical, Pathological and Bacteriological Laboratory.—Through the kindness of Colonel Woodhull and Major Crosby, the officer-in-chief of the first reserve hospital, a small Filipino house, situated on the banks of the Pasig, was given us in which to establish a laboratory. This was done on the second floor of the house. The expense of putting up working-tables was kindly borne by the Medical Corps of the army. The laboratory equipment was set up in this building and within a very few days after our arrival work was begun. We desire to speak of the co operation of the Medical Staff of the hospital who afforded us every opportunity to visit the wards and many of whom joined or assisted us in clinical and pathological work. We wish especially to acknowledge the co operation and assistance of Lieut. Richard P. Strong, a graduate of the J. H. U. Medical School, who had on our arrival already begun to do laboratory work and who gave up much of his valuable time in furthering our interests. It was found unnecessary to establish laboratories in the other hospitals, in the first place, because all were connected with the first reserve, by the Signal Service telegraphic system of which we had free use; and next because all the dead were carried to the morgue in conjunction with the first reserve hospital. We went or were frequently called to the other hospitals to make clinical and bacteriological examinations.

With few exceptions, all the dead were subject to autopsy. Post-mortem examinations were made at the civil hospitals upon natives and at the military hospital upon all that died. Exceptions were made only in the cases of those dead from gunshot wounds, when, if pressed for time, necropsies were sometimes omitted.

PREVAILING DISEASES.

The subject of the prevalent diseases may be considered as

they affect (1) the natives, and (2) Europeans and Americans, especially the American garrison.

Diseases affecting Natives.—(a) *Skin Diseases.* Of the skin diseases prevailing among the natives, aside from small-pox and other specific exanthemata, may be mentioned (1) diseases of the scalp, which are very frequent, (2) dhoobie itch; and (3) an affection which resembles closely and which is probably identical with Aleppo boil (Delhi boil, Biskra button, *epidemische Beulenkrankheit*). (b) *Small-Pox.* This disease has been so generally prevalent in Luzon that the natives have to a large extent lost fear of it. All evidence points to the greatest carelessness in preventing its spread during Spanish times. Isolation of the sick and disinfection of the habitations seem not to have been attempted, and vaccination, even among the Spanish garrison, had not been carried out. Under these circumstances it could be no surprise that after the American occupation the disease should appear and even become epidemic. The epidemic which appeared early last year was promptly met by Dr. Bournes, who caused the Spanish garrison still in Manila and the natives and Chinese within the city to be vaccinated. In order to insure satisfactory results he found it necessary to establish a vaccine farm in which young *carabao* were used for the preparation of the virus. Under the influence of this measure and by the aid of isolation of the sick the disease had in May practically disappeared within the military lines about Manila. (c) *Leprosy.* A definite focus of this disease exists in Luzon. The cases, in the neighborhood of 100, which were confined in the San Lazaro hospital came from Manila and the country immediately surrounding that city. The disease affected both sexes, being more frequent in adults, although also present in half-grown boys and girls. The commonest forms were the tubercular and mutilating. Autopsies were performed upon several cases that had died during our stay. (d) *Tuberculosis.* Accurate statistics of the extent of the prevalence of this disease are difficult if not impossible to obtain. That the disease is a common one is indicated by several facts. It is frequently met with in the native hospitals, where it may have been recognized during life or is disclosed at autopsy. Many cases of supposed beri-beri which we autopsied at San Juan de Dios proved

to be tuberculosis. It is possible that the two diseases had co-existed, for we found such combinations freely recognized by Japanese physicians in the hospitals in Japan. Tuberculosis of the lungs was also found as a common complication in leprosy individuals that came to autopsy. A not very infrequent spectacle met with on the streets are much emaciated and weak natives, affected with suggestive coughs and free expectoration. While it is not certain that these individuals were examples of tuberculosis, there is strong probability that this explanation of their condition is the correct one. (e) *Venereal Disease*. Syphilis, by general agreement (statistics not available), does not prevail unduly. Chancroids and gonorrhœa are, on the other hand, very common. The majority of the prostitutes confined in the San Lazaro were victims of these two diseases. A very common complication of the soft sore, owing to lack of cleanliness, is swelling and suppuration of the inguinal glands. (f) *Beri-Beri*. This disease is well known among the natives. It would appear to be epidemic and endemic in Luzon. It is, judging from cases met with in San Juan de Dios hospital and the statements of native physicians, constantly appearing in a sporadic form. During our stay an epidemic appeared among the Filipino prisoners confined at Cavité. Some 200 cases developed in a few weeks; the mortality ranged from 20 to 30 per cent. The several recognized forms of the disease—œdematous, paralytic, and mixed—were encountered. Clinical and bacteriological studies were made upon the living, and the dead were subjected to autopsy and bacteriological examination. The difficulty of getting to and fro between Manila and Cavité on account of the impossibility of land communication, made this part of our work difficult and time-consuming. A considerable collection of pathological material and other data has been made. This material is now in process of study and arrangement.

Diseases affecting Americans.—The chief causes of disability among the American land forces are the enteric diseases. These are diarrhœa, dysentery, typhoid fever, and gastro-intestinal catarrhs. Many of the diarrhœas are merely preliminary to the symptoms of dysentery. Other infectious fevers are relatively infrequent. A small number of cases of scarlet fever and

diphtheria only were encountered. The malarial fevers prevailed but not seriously during the months of May, June, and July.

(a) *Dysentery*.—This disease is responsible for the greatest amount of invalidation and the highest mortality. It appears in acute, sub-acute, and chronic forms. The chronic form is sometimes attended by secondary abscess of the liver. The acute form may end in 24, 48, or 72 hours. In it the whole of the large intestine and usually the lower portion of the ileum is involved. The mucous membrane of the gut is swollen, congested and œdematous, in places hæmorrhages have taken place into the mucous membrane and the sub-mucosa is swollen and its blood-vessels greatly dilated. No ulcers existed in such cases. Amœbæ were absent or very difficult to find in the fresh stools and in the intestinal contents immediately after death. In the sub-acute and chronic forms ulcers are present in the mucosa; the coats of the intestine are greatly thickened; at times large sloughs of mucous membrane, partly detached, occur, and the lesions are confined to the large intestine. Amœbæ are more commonly present in these cases but are variable as to actual occurrence and numbers. Large hepatic abscesses, usually single, were encountered in a number of these cases. Amœbæ were variable in the contents of the abscesses. In one very large abscess, occupying both right and left lobes of the liver, no amœbæ but a pure culture of the *Staphylococcus pyogenes citreus* was obtained. The clinical study of the cases of dysentery with reference to amœbæ was equally unsatisfactory. In cases with marked symptoms both in patients confined to bed and those beginning to go about but still with persistent loose bowels, these organisms were frequently missed; while in instances ready to be discharged they might, at certain examinations, be found to be very abundant. In morphology, the amœbæ studied corresponded with the amœba coli found in Egypt and in this country. The bacteriological study of cases of dysentery was carried out upon the fresh stools of acute and chronic cases and with the intestinal contents, mesenteric glands, liver, etc., of cases dying and subjected to autopsy. The intestinal flora was studied in its entirety by means of plate cultures. A variety of micro-organisms were separated. Many of these

were well-known species or occurred normally in the situations in which found. Tests with blood sera for agglutination were made and those organisms giving positive reactions were separated for further study. Two groups of bacilli were thus differentiated: (1) Having affinities with the group of *Bacillus coli communis*. The agglutination was variable, being constant and sensitive with the blood-serum of the same individual (host) and inconstant, and active in relatively strong solutions only, in serum from other individuals. (2) Having affinities with the group of bacilli of which the *Bacillus typhosus* is the type. Agglutination constant and sensitive with blood-serum of host as well as the sera of other individuals suffering from dysentery. Inactive with normal serum, serum from cases of typhoid fever, malaria and beri-beri. A bacillus belonging to the second group, which is still under study, would seem to agree with the *Bacillus dysenteriae* isolated by Shiga from cases of endemic dysentery occurring in Japan. It is regarded by us as an important factor in the causation of the dysentery of the Philippine Islands. Experiments in immunization of animals and the production of vaccine are in progress.

(b) *Typhoid Fever*.—The total number of cases of typhoid fever in the hospitals during May, June and July was far below those of dysentery; the number of deaths also was less. It was, however, a frequent affection among Americans. The examination of the blood, microscopically and with the Widal test, was of the greatest help in diagnosis. The disease came to autopsy presenting the classical intestinal lesions and also in atypical forms. In the small number of autopsies made upon those dead of this disease, several instances of slight intestinal involvement or even entire escape were met with. These cases would have remained very obscure or even undetermined except for the Widal reaction and bacteriological examination. In some instances the typhoid bacillus was found widely disseminated throughout the body, the autopsy being made immediately after death.

(c) *Malarial Fevers*.—A large proportion of the cases sent in from the field and outlying military stations where examinations had to be hastily made as instances of "malaria" or "intermittent fever" turned out to be cases of other diseases

(typhoid fever, dysentery, etc.). A number of true cases of malarial fever were, however, met with, and in the blood of these the characteristic parasites, identical with those occurring in other places in which studies of the blood have been made, were found. No quartan parasites were met with, but cases of quartan affection doubtless exist. Typical infections with the "tertian" and "æstivo autumnal" varieties of the parasite were encountered by us, and by microscopists among the army physicians in the reserve hospitals and on the *Relief*. One of the fatal cases of malaria was complicated with acute lobar pneumonia. The cases of "calentura perniciosa" which occur in Mindoro, Mindanao and in certain parts of Luzon should be studied as soon as these regions are accessible. The Archipelago is favorable also for the study of the relation of mosquitos and other insects to malarial infection. Some of the malarial cases were undoubtedly *recidives*, imported from Cuba or elsewhere. A very small number of deaths was referable to malaria. Two instances of acute malarial infection came to us for autopsy. On the other hand, several instances of malarial pigmentations of the organs, in persons dying from other diseases, were encountered. Parasites in the latter cases were absent. These men had, as a rule, been in Cuba or Porto Rico during the Spanish War.

(d) *Tuberculosis*.—A number of cases of pulmonary tuberculosis developed among the soldiers in the American troops. A definite history of exposure to wet and various hardships was elicitable in many of these cases.

(e) *Dengue*.—At Cavité there occurred a large outbreak of an epidemic fever of short duration (a few days) known locally as Cavité fever. Almost all who remained in Cavité for any length of time were attacked. Second and third attacks were common. Muscular pains were severe in some cases and not in others. A slight exanthem was present in many of the cases. Flushing of the face, restlessness and general malaise accompanied the fever and rapid heart action. Malarial parasites were not present in the blood, nor did the serum from such cases agglutinate cultures of the typhoid bacillus. The epidemic is regarded as one of Dengue.

(f) *Tropical Ulcers*.—A number of the American soldiers

suffered from a form of indolent ulceration, locally known as "tropical ulcer." These ulcers occurred singly sometimes but were more often multiple. They began as small pustules, which gradually extended. They were most frequent among those who had been compelled to make long marches through swampy districts, and the patients themselves attributed the ulceration to "poisoning" in the marshes.

(g) *Wound Infection*.—Our experience with wound infections was rather limited. The other problems undertaken, regarded as more important as bearing on the general question of diseases and its causation in the islands, left but little time and opportunity to attack this interesting subject. Certain observations of interest were made. Pyogenic infections due to the common pus cocci occurred. In a small number of gun-shot wounds causing compound fractures emphysematous gangrene occurred and the bacillus *aerogenes capsulatus* was isolated. In one instance of compound fracture of the tibia a spore-bearing bacillus was associated with the bacillus *aerogenes capsulatus*. It was found in cover-slip preparations from the original wound and in the first set of cultures. It could not be further transplanted and hence was not identified. In two other cases was the bacillus *aerogenes* met with, one a case of peritonitis following infection of the intestine from an incarcerated hernia, and the other also a case of peritonitis but secondary to perforation of a typhoid ulcer of the intestine. The army surgeons were enthusiastic as to the adequacy of the "First-Aid Package" in limiting the number of wound infections.

CLIMATOLOGICAL AND HYGIENIC CONDITIONS.

The climate is that of continual summer. There is a wet season (S. W. Monsoon) and a dry season (N. E. Monsoon). The hottest period is at the end of the dry and the beginning of the wet season—precisely the period of our visit. The climate from November to March is said to be delightful. In the worst season of the year the climate is very trying and especial precautions are to be taken if Americans are to keep well there. The extremes of temperature are not great, but the constancy of the high temperature, together with a high degree of humidity, make the climate peculiarly enervating. We were inter-

viewed at length while in Manila, officially by the U. S. Philippine Commission, with regard to climate and the hygienic precautions to be observed, as well as with regard to other medical problems in the islands. The climatic conditions and the hygienic precautions to be taken will form the subject of a fuller report to be made later.

The above represents, briefly stated, the results achieved by your expedition sent to the Philippines. As will be patent to you, not a little yet remains to be done before the scientific portion of the work is completed. This portion of the report is for the present only hinted at or withheld until it shall have been finished. It is the intention of your commissioners to make careful studies of the material relating to beri-beri, dysentery, malarial and typhoid fevers, leprosy, and the bubonic plague, which has been collected. These studies, with the exception of that relating to dysentery, will be carried out upon preserved material, and the labor involved, which has been divided between Baltimore and Philadelphia, will necessitate that some time must elapse before the finished report is forthcoming. The task of completing the study of the bacillus isolated from cases of dysentery has been assigned to Dr. Flexner, who was principally engaged with that theme during the residence in Manila. In order to carry out the experiments as designed, an outlay for experimental animals and their maintenance will need to be made. It is known to you that the original sum so generously contributed by friends of the University and appropriated for the use of your commission has been exhausted, and that private means have been drawn upon to defray a part of the expense involved. We would respectfully draw attention to this fact and to the further expenses to be incurred, and request direction as to your wishes regarding these matters.

We wish to express our deep gratitude to Messrs. Flint and Gay, whose untiring efforts during our residence in Manila made it possible to accomplish far more than we could have done unaided. It is a pleasure to acknowledge also many kindnesses on the part of Mr. John W. Garrett.

That we are deeply indebted to the officers in the Medical Service of the U. S. Army and Navy for opportunities and aid

is evident from the report preceding. Courtesies and kindnesses extended by various citizens of Manila, European and native, are here also gratefully acknowledged.

Very respectfully,
SIMON FLEXNER,
LEWELLYS F. BARKER.

WHY DO THE DIALS OF OUR TIMEPIECES HAVE TWELVE DIVISIONS? *

ALTHOUGH our arithmetic is decimal, and we usually count by tens, hundreds, and thousands, a remarkable exception occurs with respect to time. Instead of counting by ten, we count by twelve; instead of dividing the hour into a hundred minutes, we divide it into only sixty, and the minutes into sixty seconds.

An archæologist might imagine that our division of time has not been derived from the same ethnographic source as our decimal arithmetic. He would be inclined to believe that our civilization had borrowed it from another civilization. He might regard it as more advanced than our own inheritance, but, on the other hand, quite in arrear of the development of the nineteenth century.

The archæologist would be right; his surmises would be verified by the historical data respecting the old communities of Western Asia and their usages collected during the last twenty or thirty years.

The count of the hours by twelve and their subdivision by sixty was commenced by the Accadians, living within the territory of the Euphrates and the Tigris more than forty centuries ago.† It was adopted in Greece at a time when the population, who counted simply by tens, because they counted on their fingers, were yet in a barbarous state.

This primitive method of numbering the hours has survived. It is curious to notice the persistency with which established

* From the French of M. Houzeau, Director of the Brussels Observatory.

† The Accadians were the highlanders of Mesopotamia, and their attainments and usages developed into the Chaldean civilization.—Note by translator.

usages are perpetuated and the tenacity of their anomalies and imperfections. It was remarked that there were about twelve lunations in the year, and consequently the route of the sun was divided on the circumference of the astronomical globe into twelve stages or compartments, in each of which this heavenly body was in conjunction with the moon.

In the celestial divisions, in which the sun did not appear at night, the principal stars were noted. By these observations twelve constellations were formed in the extent of the zodiac, in each of which a given star was taken as the type or representative star, whose rising denoted the commencement of the corresponding hour.

Before the invention of mechanical timepieces, a watchman was on the lookout at night for the indicating stars, and as soon as one was seen he cried out the hour. It was soon found that the twelfth of the diurnal period was rather long. The intervals were divided into halves called double hours, numbering twelve, and there were also single hours numbering twenty-four. The use of the latter became general and has been preserved. It was prevalent not only at Nineveh and Babylon, but in Egypt.

An astronomical figure of the thirteenth century before our era, engraved on the ceiling of a royal Egyptian tomb, shows, for the duration of the night, the twelve stars whose appearance on the horizon at Thebes marks the commencement of the twelve single hours from twilight to dawn. It is thus clear how the duodecimal division commenced.

It spread at a very remote period to Chaldea and to Egypt. It was adopted by the Greeks, who communicated it to the Romans, whom we have followed. It was a feature of a special civilization, and never had a universal character. It was the creation of an educated and observing people, but not the creation of uncultured nature, like the decimal arithmetic, which arises everywhere because everywhere man has ten fingers.

The Chinese, more logical, counted ten hours, where the Accadians counted twelve. Other peoples of Western Asia divided the diurnal period into sixty parts. The Mexicans made a division of eight and the Mayans of sixteen parts. There

were as many systems as there were distinct origins. When the Accadians originated the division of twelve hours, they recognized the fact that the number 12 is, as an arithmetical base, preferable to the number 10. The latter is exactly divisible only by 2 and by 5, while 12 can be exactly divided by 2, by 3, by 4, and by 6, which is a great advantage for serving as a measure. The Scandinavians had observed the same thing, and reckoned not by tens, but by dozens.

In certain provinces of Sweden traces of this usage still survive, which was not abandoned when our system of arithmetic was introduced. The people still calculate by groups of 12 and by groups of 12 times 12, or 144. The first are called to-day great tens, in contradistinction to small tens, consisting of ten units; and the second great hundreds, to distinguish them from little hundreds, consisting of one hundred units.

Arithmetic with the base of 12 is more erudite than that with the base of 10, which is natural and primitive. It attests an intellectual development superior to that of the savage, who goes no further than his ten fingers, or at times his ten toes added to his ten fingers. The bases 5, 10, and 20, multiples of 5, were the first in every community. They were soon confounded with the base of 10, which was certainly the first arithmetical measure in Chaldea, as elsewhere.

When the division of the time into twelve hours had been instituted and the advantages of the base twelve had been recognized, an attempt was made to combine the two systems. It was then that the sexagesimal division was introduced, the number 60 containing both 12 and 10. In the numerical series it is the first number comprising the two divisions.

This idea was embraced so enthusiastically that the division by sixties was applied to everything. All the units of weight, of length, of capacity, at Babylon and at Nineveh, were divided into units or primes, of which there were 60 in the principal unit. The prime was divided into 60 seconds; the second into 60 thirds; the third into 60 fourths, and so on indefinitely. It was a complete and perfect system.

It has been transmitted to us, and survives in the method of designating the time. The people who inaugurated such a system were more cultured than the barbarian Grecians, to

whom it was communicated. To-day the maintenance of their computation of hours, minutes and seconds is an anachronism, and compared with our scientific advancement, a mark of inferiority. Is not the repetition of the twelve hours a defect in our dials?

The unit is the diurnal period, the rotation of the globe from noon to noon or from midnight to midnight. It is perfectly illogical to make two halves and to recommence the counting in each of them. From this alone it might be imagined that our division of the time had its origin in an age when different methods had to be employed to determine the hour during the day and to ascertain it at night. The suspicion would be well founded. The ancient astronomical peoples, to whom we owe the plan of our dials, were obliged to ascertain the hour at night by the stars, and in the day by the sun. The processes were quite distinct.

At night it was necessary for the watchman to look for the rising of the typical stars. Not only was a clear sky requisite, but a perfectly pure atmosphere, exempt from fogs at the horizon. During the day, on the contrary, the observation of the gnomon was by other persons. The day watcher and the night watcher belonged to two distinct professions, meeting only at the time of changing watch; thus the night hours were entirely separated from those of the day, and the calculation commenced from sunset, and they were twelve in number.

At sunrise commenced the day hours, also numbering twelve. That is why the hands on our dials make two revolutions instead of one during the diurnal period, or as the Greeks say, *nychthemeron*, the full natural day of twenty-four hours. The double revolution on the dial is derived from a period when there were no mechanical timepieces, not even water-clocks, and when the dial of the heavens was the only one that could be consulted. The celestial dial was double: that of the stars during the night, and that of the sun during the day.

Our clocks thus bear upon the face the souvenir of a very primitive period of civilization. It is an infantile feature, which has no reason for existence, and is a real inconvenience. What simplicity would there not be in designating the hours continuously from one day to the next? As it is, we are troubled to

distinguish between the hours before noon and those after noon.

When we receive a telegram from a distant city, as from San Francisco or Melbourne, where the local time differs considerably from ours, we may be in doubt whether it was forwarded before or after one that we ourselves had dispatched. In our railway time tables for long routes, when we are considering the arrival of a train commencing its course the night or the day before, it is often difficult to tell whether a given figure represents the morning or the evening hour.

In certain countries, a system of very thick printed lines has been adopted to designate the night hours, meaning generally from six o'clock in the evening to six o'clock in the morning. But close attention is necessary in following this distinction, because one is a little disconcerted in summer travelling by the extension of the night from six o'clock in the evening to broad daylight at six in the morning.

In the railway service, notably that of special trains, whose hours are never anticipated before their announcement, their computation from one to twenty-four would be of great utility and at times might prevent dangerous confusion. It is probably the first reform that will be introduced in the horary system. Railway offices are interested in taking the initiative. If the hours were given continuously, as 13, 14, 15, etc., after the noon hour, the public would become habituated readily and quickly to the change.

Notwithstanding all that our timepieces have preserved of the vestiges of an antiquity of forty centuries, the progress already realized in the method of calculating the time must be kept in view, and it must not be imagined that further progress is out of the question.

The night hours become equal to those of the day, after having remained different for more than thirty-seven centuries. As the point of departure, the noon hour, does not change from day to day, the uniformity remains absolute. But we divide our hours into two series, two revolutions on the dial, evident remains of the period when there were two kinds of hours.

Why commence the computation again when we are half way through, at the risk of possible confusion? Why not rid our-

selves of all uncertainty? There is but one reason, and but one answer: Because the present system has the sanction of four thousand years.—*Scientific American*, July 8, 1899.

BULLET WOUNDS IN MODERN WARFARE.

IT is safe to say that since the introduction of the small-calibre rifle and smokeless powder the conditions of warfare have undergone an almost complete change. Until our war with Spain little was definitely known of the effects produced by wounds resulting from a bullet fired from a modern rifle. Indeed, with the exception of the experience of the British gained in Indian frontier wars, our knowledge in regard to the latest patterns of small-arms may be said to have been practically *nil*. Much valuable information was gathered during the fighting in Cuba. And the battles and skirmishes now continually taking place in Luzon will undoubtedly furnish further and more precise evidence in regard to the comparative deadliness of the old and new weapons and to the difference in the character of the injuries inflicted by them. The Filipinos, as were the Spanish, are chiefly armed with the Mauser, an excellent type of the up-to-date rifle. The penetrating power of the Mauser bullet of the pattern of 1897 is, according to Major Legarde, 35.125 inches. The Krag-Jorgensen of 1898 penetrated 26.125 inches, while the Springfield could send a bullet only six inches through the same thickness of wood. The velocity of a bullet expelled from a Lee-Metford is nearly equal to that of one from a Mauser. What then are the consequence and nature of an injury produced by a bullet travelling at such a marvellous speed? Brun's experiments led him to believe that at ranges over three hundred metres the small-calibre bullet hardly ever becomes deformed, while between four hundred and fifteen hundred metres it as a rule makes a wound with a very small passage, with very small apertures at the points of ingress and egress and with very little shattering of bones or tearing away of the soft parts. Stevenson says the velocity of

the bullets since 1865 has greatly increased and consequently in the same ratio its energy or impact. With increased velocity they have gained enormously in penetration, but if they do not reach a vital part or strike a large bone, they do not disable. With respect to the character and gravity of a wound the same authority remarks: "When a bullet has passed through soft parts only, the exit wound is usually a circular punctured-out hole, but its edges are slightly shreddy and torn. * * *

The nearer the bullet strikes the bone at its greatest diameter the greater is the destruction produced both in the bone and in the soft parts beyond; but even with grazing shots most severe splintering of the bone and extensive pulping of the soft parts are observed.

Dr. Davis, speaking from his experience in the Greco-Turkish War, reaches the conclusion that the initial force of a bullet is an onward or penetrative one; that when penetration is impeded the onward force becomes transformed into a lateral one; that explosive effect is only another name for lateral action, *i. e.*, outside the track of the bullet; that lateral action is most marked in hard bones (the fragments being carried onward) and in organs containing water (bladder, brain, liver, etc.); that practically the rotation of the bullet on its axis does not materially affect the character of the injury; that the effect of gunshot wounds is not so severe upon the living body as upon the dead; that the destructive power of the small-calibre gun has been overestimated; that its stopping or disabling power is less than that of larger calibres; that wounds in future conflicts will be as a rule less severe and will heal more rapidly, with fewer complications than has been the case in the past; that less radical treatment will be required, and conservatism will be followed by brilliant results. The foregoing views have been quite recently corroborated in many respects by the army surgeons in the Philippines. Surgeon Beck, of the Thirteenth Minnesota, says that "to the small-calibre bullet of the insurgents' Mausers the wounded boys owe their lives and a continuance of their usual friendly association with good arms and legs. In the bony structure of the body the Mauser bores a clean little hole, rarely fracturing a limb; in the skull it takes a centre shot to kill." He says that he has

knowledge of fully a hundred men shot through the chest cavity in every portion except the heart, who recovered. But while the injuries brought about by bullets from the army rifles of to-day are on the whole less severe than was formerly the case, abdominal wounds are as fatal, if not more so, than in former times. Surgeon Beck says: "Through the soft abdominal tissues the Mauser is always fatal. Wounds of the intestines, stomach, and spleen always kill. Every operation for resection of wounded intestines resulted in death, and the operation is now entirely abandoned." This is in line with the opinion of a large number of army surgical authorities, although views differ considerably as to whether in penetrating wounds of the abdomen a radical or conservative treatment should be pursued. Dr. William Parker, of New Orleans, discussing this point, records his belief that in abdominal wounds caused by the small modern bullet laparotomy should not be attempted in the field. Dr. Nicholas Senn lays down the dictum that laparotomy in penetrating gunshot wounds of the abdomen is indicated in all cases in which life is threatened by hæmorrhage of visceral wounds, and the general condition of the patient is such as to sustain the expectation that he will survive the immediate effects of the operation. And Sir William MacCormac advises, when penetration has been diagnosed, that abdominal section should be performed as quickly as possible. The fact, however, may be noted here that the mortality which has up to the present followed penetrating wounds of the abdomen treated on the battle-field or in war hospitals has been extremely high. The French lost 91.7 per cent. of their cases in the Crimea, and the English 92.5 per cent. In the American war the death rate was ninety per cent. From a consideration of the facts arrived at in regard to the bodily damage inflicted by the small-calibre bullet in the Spanish-American, Greco-Turkish, Philippine, and Indian frontier wars these conclusions may be laid down:

That while the modern army fire-arm leaves nothing to be desired as a humane weapon, it hardly fulfils the special purpose for which it has been designed.

That owing to the velocity with which the bullet of a modern rifle travels there is but little fear of pieces of clothing

being carried into the wound, and in consequence the danger of infection by these means is very considerably reduced.

That the wounds produced are as a rule much less serious than when bullets of a larger calibre are used.

That the velocity of a bullet fired from any one of the new rifles is so great that it does more damage at a distance than at close quarters.

And, lastly, that abdominal wounds effected by bullets fired from weapons of the newest type are in a high degree fatal.—
Medical Record.

TYPHOID FEVER IN SOUTH AFRICA.

THE prediction was made, some considerable time ago, by those familiar with South Africa and with the diseases incidental to the country, that the evil most to be dreaded by the British soldiers campaigning there, and especially by those besieged in the towns, was enteric fever. In every war yet undertaken typhoid fever has probably claimed a larger share of victims than has any other disease. The explanation of this is comparatively easy. Soldiers in camp do not live under healthy hygienic conditions; their drinking-water supply is often impure, and their food and cooking, despite the utmost care that may be taken in these respects, are frequently bad. The season has now arrived when typhoid fever, the most prevalent and deadly disease of South Africa, rages most virulently.

In the Galeaka-Gaika campaign of 1877-78, and in the Zulu war of 1879, the British troops suffered so severely from its inroads that Helpmakaar had to be evacuated. Professor Sambon, writing in the *Journal of Tropical Medicine* of December 15th, says that in these two wars the British appeared to have suffered principally from a mixed infection of enteric and intermittent fevers, and refers to the fact that the term "typhomalarial" was applied by Dr. Woodward to the mixed infection while serving in the Federal army of the Potomac in 1861. Dr. Sambon, however, does not think that this condition is of frequent occurrence, but is rather inclined to hold the opinion that

although in a malarious region intermittent fever may develop in a patient suffering from typhoid, it happens far more often that the typhoid fever attacks a man actually suffering from malarial paroxysms, or it evokes into activity a latent malarial infection.

The origin of typhoid fever in South Africa will be doubtless thought by the majority of medical men to be the same causes which are usually considered to occasion its outbreak in other countries. On this point Dr. Sambon is not altogether in agreement with the majority, for while allowing with a certain degree of reservation that the most common cause of typhoid epidemics in South Africa is a polluted water supply, he points out that many medical practitioners in South Africa assert that the origin and dissemination of the malady depend chiefly on infected cattle. A much more potent vehicle of infection than diseased cattle is probably flies. A bright light was cast upon the harm wrought by these insects as carriers of disease by the finding of the United States commission appointed to inquire into the cause of camp epidemics of typhoid fever in this country during the war. The commission inspected the camps at Chickamauga, Huntsville, Fernandina and Jacksonville, and found that the typhoid fever in each instance was brought by the volunteers from their State camps. The water supply was in most places good, and was not responsible for the spread of the fever. This was effected, in the opinion of the members of the commission, by the flies which swarmed in all the camps, and devoted their attentions impartially and alternately to the faecal matters in the open and not disinfected sinks and to the food of the troops. The great prevalence of enteric fever in South Africa during the hot season would appear to add further confirmation to this theory, as the statement may be made without fear of contradiction that in no other portion of the world do flies abound in such numbers.

Whatever may be the predominating cause of the origin and spread of typhoid fever, the fact remains that the disease has broken out among the British troops at the front, and especially in two of the towns encompassed by the Boers. Of the three besieged towns, Kimberley is in every respect the most

healthy; its situation is good, its water supply is pure and sufficient, and its sanitary arrangements are conducted on approved modern principles. Mafeking, which is but a small place, is constructed and its sanitation managed on much more primitive lines. In addition, its water supply is inadequate and impure; consequently much sickness is there present. But it is when we come to Ladysmith that we find by far the most serious condition of affairs, both on account of its natural insalubrity and owing to the large number of soldiers who have been cooped up within its boundaries for the past two months. This town, even in times of peace, is by no means healthy. It lies low and amidst swampy surroundings; its sanitation is defective, while its water supply is lacking in quality and quantity. It has been a military station since May, 1897, and has always suffered from a prevalence of enteric fever, dysentery and ague. The news, then, that enteric fever and dysentery have broken out on a large scale in Ladysmith can be matter for no surprise, and must add greatly to the difficulty besetting the beleaguered garrison on every side.

With regard to the question of immunity to typhoid fever, or rather of comparative immunity of the British troops in South Africa, past experience teaches us that those from India and who had been previously stationed in the country are not likely to suffer so much from the disease as are the young soldiers who have come direct from England. When typhoid fever gains a foothold among bodies of men living under the conditions in which the British troops in South Africa are compelled to live, the likelihood is that the disease will continue to spread, and that it will be very difficult to put into force measures for its successful suppression. Doubtless the medical and sanitary officers of the British army will exercise a strict supervision over the sanitary arrangements of the camps and towns, but the fact is evident that their skill and energy will be taxed to the utmost.—*Medical Record*.

NOTES ON THE WAR IN SOUTH AFRICA.

BY F. H. P.

(From the United Service Magazine for March and April.)

WAR ultimatum by Boers, October 9. Enemy invade Natal, October 11. Symons at Glencoe with 4000. White at Ladysmith with 10,000. Railway from Glencoe to Ladysmith thirty-five miles, with a difficult pass near Glencoe. By the 18th Symonds is threatened by three columns, in all say 14,000. One from Buffalo River, E.N.E. One from Newcastle (very heavy with heavy artillery), N. One from the Passes, W.S.W. The last cuts the line north of Elandslaagte. Symons, though thus environed, does nothing. On the 20th the Eastern Boer column, say 2500, prematurely arrives within striking distance. Symons attacks. The vanguard of the Boers with some guns are on Talana Hill. Symons storms the position, and is killed. The Boers retire and remove their guns. It is said that some of the guns were still on the top when the British reached it, but if so they were allowed to get away. It seems clear also that some of the Boers fled in disorder eastward towards the Buffalo River, and might have got punished but for the "white flag ruse." But it also seems clear that the main body of the Boer forces had been behind the hill during the fighting, and that the artillery retired on them, and that this body then retired in good order northwards to gain the Northern column. So that when the cavalry sent in pursuit got well to the further side of the hill, that portion that pursued north were entrapped and taken prisoners, and only those that pursued eastward, were able, after doing some execution, to return safely.

The troops (minus the captured cavalry) had hardly returned to camp when General Yule, who had succeeded to the command, found himself under fire from the heavy guns of the Northern column. A reconnaissance showed that the railway was barred behind him. He first shifted his camp so as to try and get a better position, but on the 23d, taking the help and advice of an old soldier who had settled in Natal, and perforce abandoning stores and wounded, he planned and carried out a

masterly retreat over the mountains east of the railway, and joined General White at Ladysmith on the 25th.

Meanwhile General White had on the 21st attacked and overcome a portion of the 3d Boer column, but failed to open the line to Glencoe (Elandslaagte), and on the 24th, for the purpose of securing General Yule's retreat, fought the action of Rietfontein, which was completely successful in securing that object without great loss.

Remarks.—General Symons ought to have retired on the 18th when the line was still open, taking his stores with him. The actions of Talana Hill, Elandslaagte and Rietfontein, would in that case not have been fought. It appears clear that General Symons held that he could maintain himself in Glencoe (Blue Book—Debate of February 1st). He appears to have fought at Talana Hill under the impression that he could beat off the three columns in detail and successfully. This seems extraordinary now, but at the time many people shared the delusion. General Yule deserves great credit for so quickly appreciating the gravity of the crisis, for accepting colonial advice and assistance, and for carrying out the retreat. General White's conduct, unless we blame him for not insisting on General Symons (his senior in service)* retiring, is unassailable. Both his battles were fought for definite objects. At Elandslaagte (though communication with Glencoe was not reëstablished) the enemy was severely beaten and weakened, and it was probably the knowledge that General Yule was about to retire by another route that prevented General White from following it up. Of Rietfontein enough has already been said.

In the meantime the Boers were invading the colony west of their frontier. The smaller stations on the railway line to Rhodesia, which runs close to the frontier, were occupied, the line broken, and Griqualand West as well as Bechuanaland invaded and overrun. Only Kimberley and Mafeking, which had received small garrisons, held out. It was universally expected that these places must fall before long, but, as we know, the

* Sir George White was considerably senior to Sir W. P. Symons. Sir G. White was a Lieut.-General of 1895 and Sir W. P. Symons a Colonel of 1887 and a local Major-General.—EDITOR.

courage and fortitude of their commanders and defenders have hitherto preserved them.

Remarks.—It should have been proclaimed that whilst endeavoring to keep natives neutral, we should at once, if the enemy trespassed on Swaziland, Zululand, Pongoland, Basutoland, or Bechuanaland, hold ourselves free to organize the natives of these territories to attack and destroy the Boers. This seems to have been done only in the case of Basutoland. Swaziland and Zululand have been overrun and their people commandeered by the Boers, and we have nevertheless restrained their populations even from defense.

Sir G. White's force was now concentrated at Ladysmith (say 14,000 men), but the three columns of the enemy which had driven away Yule, and at least equalled General White's force in numbers, were approaching from the N.E., whilst an equal force of Free State Boers had some days before debouched from Van Reenen's Pass on his west or left bank, and their outposts were threatening Bester's farm. General White tried to entice them to an action before the Transvaal Boers could come in line with them, but they were cautious, and he failed. On the 29th the two Boer armies were in line. Now was the time when, according to rule, General White should have retired either behind the Tugela, or, perhaps better still, on the high land north of the Tugela, commanding Ladysmith on the north and Colenso with its bridges in his rear.

But this was not to be, because Ladysmith had been made a depot for the war, and was filled with stores and ammunition which it would have been disastrous to abandon. It was therefore necessary to hold Ladysmith.

Ladysmith is in a valley and is environed by low hills, which were occupied by the British. But these again are surrounded by larger heights, which the enemy proceeded to occupy. Only the heights on the south through which the railway passes to Colenso, were occupied, not very strongly, by British forces, which alone held the Colenso bridge and the communications with Durban.

By the 29th the Boers had got heavy guns on Pepworth hill, 2 miles north, and Lombard's kop, 4 miles east of the position, as well as on a hill closer in and in a N.N.E. direction,

and the English general determined to make an effort to drive the Boers away from this last position and, if possible, scatter and overwhelm the forces in the north, consisting chiefly of Free Staters. For this purpose he ordered two regiments to proceed secretly in the night to Nicholson's Nek, a point on the rear of the Free Staters' right flank, whilst with the bulk of his forces he marched, also by night, on the hill to the N.N.E. The two regiments had not proceeded more than half-way to Nicholson's Nek, when their mules, with mountain guns and all the small-arm ammunition, were stampeded by a party of Boers, and they were compelled to halt, and soon after took up an indefensible position, where they were eventually, after many hours' hard fighting, all destroyed or compelled to surrender. Sir George, on his side, when he arrived at the hill, which was his objective, found it abandoned. Perceiving that the enemy was in position on the rear of the hill, he advanced further to the N.E. and attacked, the enemy retreating before him. After proceeding some miles, he found his right flank severely engaged with large forces of the enemy, supported by heavy guns on the hills. He then retired under a very heavy fire and with considerable loss, and had it not been for the opportune arrival of a naval contingent with heavy guns, serious consequences were imminent. As it was, his forces regained Ladysmith, but were too exhausted to effect any movement in support of the two regiments.

Remarks.—Our difficulties in South African warfare have been mainly due to the fact that a majority of British subjects in the colony are secretly hostile to the English. As everywhere else, Ladysmith is full of traitors ready to give information to the enemy and to lead the British into traps. Had Sir G. White served in Africa, or had he studied the history of our wars there, he would have been very cautious of supposing that he could surprise the Boers. At all events, when he found that the enemy had in the night removed the guns from the hill, he ought to have perceived that his plan was known, and suspected a trap. He should have at once retired and recalled the flanking detachment. Instead of this, he allowed himself to be allured to a forward position, where he was out of touch with the detached troops and was himself in danger.

A smaller responsibility lies on the colonel in command of the two detached regiments. He too should have perceived that his movement was known and provided against. He ought at once to have retreated, as he could be of no use without guns and ammunition, apprizing the chief by his best mounted messengers of his return and the reasons for it. The whole affair was disastrous to the British, and ended in the force being shut up in Ladysmith, possibly till its surrender.

Sir G. White honorably took all the blame for the plan on himself. But the plan was a good one, if it could have been carried out secretly. It was his failure to abandon it, when he knew it had leaked out, that caused the mischief.

By November 1st General White's communications with Durban were cut off and the troops on that line, some 3000 or 4000, were driven back to the Mooi River, whilst the enemy ravaged without resistance the whole country beyond. Disaffection spread through the Northern districts of Cape Colony, and the weak forces which held the lines from East London and Port Elizabeth had to retire. Stormberg Junction, an important strategic point connecting these two railway lines, had to be abandoned, and Naauw Poort Junction, which connects the latter line with that from the Cape to Rhodesia, was severely menaced.

Early in November General Buller, who had, on the outbreak of war, been appointed with a force of 50,000 men as Commander-in-chief in South Africa, arrived at the Cape. It was supposed that he had planned a campaign of which the principal features were to take advantage of the occupation of the enemy's forces in Natal and towards Kimberley, in order to concentrate his forces as they should come out on the three lines,—Cape Town-De Aar, Port Elizabeth-Naauw Poort, and East London-Stormberg, and then, invading the Free State, press up towards Bloemfontein, and eventually Pretoria.

Such a plan with such forces seems absurd enough now, but there is little doubt that it was looked on with great favor in certain military circles at the time. Nevertheless there were not wanting critics (especially one German officer of high rank who wrote to the *Times*) who did not fail to point out that these lines, passing through a doubtfully friendly country for

500, 400 and 350 miles respectively, would require a strong guarding before even the advanced bases were reached, at De-Aar, Naauw Poort and Stormberg; that those bases must be made absolutely secure before the stores for the campaign could be trusted to them; and that then there remained a march of 400 miles through an enemy's country, where every mile of communication would be exposed at least to the guerrilla attacks of mounted forces—that Napoleon, when he marched his 800 miles to Moscow started with 800,000 men and arrived with 150,000, the remainder having been consumed in the defense of his lines of communication—a defense which proved insufficient.

At all events Sir Redvers Buller did not take this course. Lord Methuen at Orange River was supplied with a force of 10,000 or 11,000 men for the relief of Kimberley. The forces in the north of Cape Colony were somewhat strengthened, and Buller himself proceeded to Durban and collected the remainder of his corps with a view to relieve Ladysmith.

On November 23d, Lord Methuen advancing along the railway line from Orange River was confronted by about 2500 men on a strong position at Belmont and drove them from it, though with considerable loss. On the 25th he had to encounter a larger force—say 4000 at Enslin, and again, but with heavy loss, took the position. On the 28th he arrived opposite the Modder River, where the railway bridge had been destroyed.

The railway line here runs nearly north to the broken bridge. The Riet flowing nearly north-west joins the Modder, flowing west, just above, *i. e.*, east of the bridge. The combined waters flow from the bridge nearly due west. So that east of the line is a triangular tract flanked by the Riet and exposed to rifle-fire from its bank. West of the line the river lies straight in front and a rise of the ground near the bank affords some cover. Lord Methuen had been informed that the enemy would not defend the river, but a position at Spytfontein some miles further on. Later, however, a native stated that the Boers were in force at the river. The force marched on, on both sides of the line until the right wing had got well into the triangle. They were suddenly assailed by a terrific fusillade

from the enemy concealed under the bank of the Riet both in front and flank, and were compelled to lie down and so remain, without water and under a burning sun for the rest of the day. An advance on the immediate west of the railway was also stopped by the insupportable fire from the river bank in front. Lord Methuen then endeavored to lead a small party across the river lower down, but the enemy were in force and his force was repulsed and himself wounded. A similar attempt on the extreme right was made and the river was crossed, but the attack was not supported and resulted in failure. A third attempt on the extreme left and beyond the Boer position was successful, a small force crossed and advancing on the enemy's flank drove them back towards the bridge, but the men, getting under the fire of our own men south of the river, had to stop. Darkness then came on ; the 300 or 400 men who had crossed remained on the further bank, and nothing further was done, though the enemy were seen retreating in large numbers towards Jacobsdaal.

During the night some of the enemy who had so retired were persuaded by their leaders to return and carry off the guns which they had abandoned. When the British entered the position next day they found no trophies.

Remarks.—There was a want of caution in advancing. It is true that the Boers gave no sign of their presence, but by a feint at a turning movement on either flank, the facts might have been ascertained, and it was not probable that so excellent a defensive position, a river scarcely anywhere fordable, with high sloping banks, covered with bushes and traversed by garden walls enclosing houses would have been neglected.

Lord Methuen's attempt to cross was made at the wrong place. Moreover he should not have led it himself. How much better it would have been if he had been in the right place to support and press the one turning movement which succeeded, and to prevent our men from firing on their own comrades as they advanced along the opposite side of the river.

The losses in this as in the two previous battles were lamentably heavy. The general has been much blamed for attacking instead of turning these positions. If transport was available sufficient to enable him to advance independently of

the railway, he is, of course, much to blame. But there is room for doubt on this point. If, on the other hand, he was absolutely confined to the railway line, he ought to have been careful to prevent his exact objective, the strength and nature of his force, the progress of his preparations and the precise date on which he was to set forth, from being published, as they were, in every newspaper in Europe. Machiavelli, we are told, said, "It is difficult to defeat an enemy who knows both your strength and his own." The Press censors at the front, and the War Office at home, whilst often absurdly over-careful, have frequently been grossly careless as to the information they allow to pass.

It was not till the 11th December that Lord Methuen was able to advance. He had to rest and reinforce his men, to repair the line up to the Modder (for food purposes), to bridge that river, and to secure his line of communications which the Boers had begun to threaten.

This delay enabled the enemy to improve their fortifications at Spytfontein by extending a line of intrenchments, solidly made and protected by wire fencing, all along the foot of a line of hills running N.W. and S.E. from that centre for a distance of some twelve miles, and now known as the Magersfontein position.

On the 18th December Lord Methuen shelled this position, and at night a force under General Wauchope was sent to surprise at dawn a point in its face as preliminary to a general front attack.

This force was marching in quarter-column, quite unaware of their proximity to the enemy's lines, when they were stopped by the fencing. Immediately a terrific rifle-fire at close distance was poured on them, killing General Wauchope and an enormous proportion of men and officers. The whole attack was disorganized. Some pressed on and after brave fighting were killed or made prisoners. The rest lay down and, as at the Modder, had to remain for long in that position. At daylight a general attack was made and failed, and the residue of the night attack were only rescued by heroic exertions and after heavy losses. A heavy cannonade closed the proceedings whilst the British forces regained their camp.

Remarks.—Napoleon's aphorism quoted in the last number of this Review, "Immediately change your plans if they become known to the enemy," neglected by General White in his action on the 3d November was again neglected by Lord Methuen on this day. In both cases the result was disastrous.

THE SOUTH AFRICAN WAR.

(From the "Army and Navy Journal," March 31, 1900.)

THE scanty intelligence that filters through from Bloemfontein day by day continues to be of a peaceful character save for an occasional affair of outposts. In some respects the news is distinctly bucolic. Refreshing rains have fallen and new grass is springing up on the veldt. The farmers from the surrounding country are filling the town, bringing in their wagons laden with produce, which they sell freely to the troops. With the 14th Infantry Brigade, a brigade of cavalry, half the Brigade of Guards and the Gordon Highlanders encamped north of the town near the Modder River and guarding his front, Lord Roberts behind the curtain of the censor, now again closely drawn, is still engaged in the necessary work of recuperating the over-wrought powers of his army, securing his flanks and rear preparatory to an onward move, inspecting his brigades, reorganizing his transport, and forming depots of supply. The long and rapid marches from Paardeburg, with heavy fighting under a tropical sun and without water, were trying almost beyond endurance to the troops. The wear and tear of horseflesh is a serious factor to be faced, and one that will continue in an increasing ratio until the end of the war, as the lines of advance lengthen out, necessitating, as we have frequently urged, an unstinted and continuous supply of remounts, as well as a substantial increase of the veterinary staff. At Kroonstad, the Boer headquarters, 120 miles to the north, 20,000 Boers are said to be concentrating for a determined stand, but a preliminary fight at Brandfort is not improbable. Continuous arrivals of hostile commandoes and the holding of councils of war at Kroonstad are reported. That place would appear to be one

favorably situated for defense, being covered by the Valsch River flowing across its front, and backed by a range of mountains. The position is no doubt being strongly intrenched on a wide front by the Boers, according to their wont, as they seem hardly yet to have appreciated the new power developed in the British army since the creation of mobile columns conferring the ability to avoid a frontal attack on their impregnable trenches, and to work round their flanks.

The general attitude and intentions of the Boer leaders appear to be full of uncertainty, which is likely to be increased by the death of General Joubert, their ablest strategist and most chivalric soldier. President Kruger is said to have constituted himself Commandant-General of the Boer army, and owing to the dissensions now existing between the Free Staters and Transvaalers, it is possible that no serious resistance may be offered to Lord Roberts' advance until he attempts the passage of the Vaal River. There is now no doubt that Commandant Olivier, trekking with a force said to be 6000 strong, with numerous wagons, the retreating commandoes from Colesberg and Stormberg, has eluded General French's column, which with worn-out horses was unable to pursue, and has passed to the north along the Basuto border. He is reported to have reached a point north of Winburg, and to be far on the road to Kroonstad, after resting his force, prostrated by incessant marching day and night, at Clocolan for forty-eight hours. General French has rejoined Lord Roberts at Bloemfontein from Thabanchu without fighting, but having captured a number of the enemy's wagons with supplies. He left Colonel Broadwood to hold that place, as well as the Leeuw River flour-mills twenty-five miles farther east. Colonel Pilcher, whose raid against the Sunnyside rebels and Douglas on the western border in December and January, will be remembered, has appeared at Ladybrand. Descending like a meteor with a small party upon the place on Monday, he captured its Landdrost, but was subsequently obliged to withdraw before a superior force of the enemy, which may have been the rear-guard of Olivier's commando covering the movement of his convoy towards Senekal, a town sixty miles to the north. The taking and holding of Ladybrand by the British is necessary to complete Lord Roberts'

chain of posts across the Orange State from Jacobsdal to the Basuto border, and we shall no doubt hear very shortly of its effective occupation. Generals Clements, Gatacre, and Brabant, have apparently accomplished their work in the occupied districts north of the Orange River. General Clements, marching towards Bloemfontein in several columns from Philippolis, entered Fauresmith and the neighboring mining town of Jagersfontein on Tuesday, and was well received. Fauresmith is the chief town in the southwestern part of the Orange Free State, situated at an important junction of main roads. A garrison has been placed there, the retention of the place being necessary for the pacification of the districts of which it is the centre. A commando was stated to have been intrenched at this point, and to be determined to offer a stubborn resistance, but General Clements entered without opposition. With the dispersal of this commando—if it existed—all organized Boer forces have disappeared from the south of Bloemfontein. General Gatacre's column, marching north by the east side of the railway from Springfontein, where he has been chiefly occupied in receiving the submission of the burghers, reached Bloemfontein on Tuesday.

General Brabant's column of colonial horsemen, based on Aliwal North, is available either for an advance northwards along the Basutoland border, or for return, if necessary, to the districts of Cape Colony, where rebellion so lately reared its head. On Saturday Sir Alfred Milner reviewed General Brabant's command at Aliwal North, and expressed his admiration at the appearance of the men, and his appreciation of the excellent work they had done in crushing the rebel movement in the eastern portion of Cape Colony, and in assisting to free the invaded districts. On Tuesday the High Commissioner arrived at Bloemfontein, where he was given a cordial reception by the townsfolk. Rebellion is still more or less active in the west. A rebel commando was reported on the 23d inst. to be intrenched between Van Wyk's Vlei and Kenhart, but to have since crossed the river into Gordonia. Sir Charles Parsons' column, sweeping through the country, was moving against them in the direction of Kenhart. Further north the Transvaal Boers, augmented in numbers since the relief of Kimber-

ley, have reoccupied Griquatown, commandeering and looting. Bodies of rebels, moreover, have been seen again near Barkly West. It is evident that constant vigilance and the operation of mobile columns will be required for a considerable time yet, before the turbulent spirits among the Dutch subjects of the Queen return to a state of complete allegiance. A commando of 800 Boers with four guns still holds the position on the north bank of the Vaal at Fourteen Streams, and a sharp attack was made on the British force at Warrenton, on the south bank, on Wednesday morning, but without inflicting any serious loss on our troops. The latest message from beleaguered Mafeking is dated the 16th inst., and is more reassuring, although the task of freeing the garrison appears to be at present beyond the power of Colonel Plumer's force. Encircled by its trenches the place continues both to bid defiance to the enemy's continuous bombardment, and to develop its own internal resources, having established an ordnance factory capable of producing shells, fuses, and gunpowder of serviceable quality, in addition to a 5½ in. howitzer—a truly remarkable performance. Now that Colonel Plumer has been checked at Lobatsi by superior forces, there is all the more pressing need for increased effort to reach Mafeking from the south. Meanwhile, there is some reason to think that the resources of the place will enable it to hold out until relief comes, the difficulty of feeding the natives having been got over by some means not yet explained.

News from Natal as to the strength, position, and intentions of the Boers there are conflicting and, notwithstanding all that we have heard of the fortifying of the Biggarsberg, it appears now to be possible that, instead of defending that formidable line of mountains, the Boers may decide to vacate them and defend the passes only. On the 20th inst. the Boer line along the Biggarsbergs extended from Cundycleugh in the west, resting on the Drakensbergs to Beith in the east, a distance of forty miles. Its strongest portion lay across the Newcastle road, with advanced posts at Waschbank and Meran ten miles north of Elands Laagte, where Sir Redvers Buller holds the rail-head. On the Free State side the enemy hold the passes of the Drakensbergs from Olivier's Hoek to Cundycleugh, their main force being at Van Reenen's Pass. On the Zululand border a

commando was stationed to guard the left flank. The total strength of the Boers in this part is now estimated at 10,000—a small force, notwithstanding their mobility, to defend so extended a line. The main army of the Transvaal is supposed to be massing at Kroonstad to oppose Lord Roberts, and it is not impossible that the reports of deserters may prove to be correct, and that the Biggarsberg range may be found to have been evacuated in favor of the passes when the British again advance. The flying column of Colonial scouts is reported to have had a sharp skirmish with the Boers in Zululand about the 20th inst., and to have captured much cattle. The steady flow of reinforcements to South Africa continues unabated. Some 30,000 men have landed there during the current month. The Eighth Division is expected to disembark shortly at Port Elizabeth and East London, to take the shortest lines of advance to the front. The total numbers in the field, even when supplemented by the further 26,000 to be dispatched in April, will be none too much to secure that rapid and effective prosecution of the war which is so great a desideratum. The task yet to be performed by Lord Roberts is one of great magnitude when the distances to be traversed and the areas to be occupied are considered. The western rebellion is still far from being crushed, and many small garrisons will be required both east and west to prevent the recrudescence of disloyalty, who have taken up arms, and the amount of compensation due to loyalists for losses sustained are matters lying outside his province. It is essential, however, for the future prosperity of South Africa that the Queen's authority be vindicated, and that the loyalty of those who are standing so nobly by the mother country in the war be given no cause for disappointment and discouragement.

Military Notes.

THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES.

THIS Institution was incorporated under the laws of the State of New York, for the purpose of constituting it a nucleus around which could gather the educational elements of the highest professional military attainments known to the science of warfare, to the establishment of a *military museum and library*, and generally the promotion of the military interests of the United States—the library to contain all classes of military literature, and the museum to be replete with emblems and souvenirs of our national military history, such as flags, guns, shells, etc., from well-known battle-fields; arms and equipments of a past and present generation; pictures of the great commanders of our national wars; relics of the fast disappearing races of our North American Indians; and in fact everything that would interest and instruct the youth of the country, and inspire them with the patriotic sentiments of their forefathers.

The work of sustaining this Institution so far has been at the expense of its members, and without any pecuniary assistance from outside sources; but the nucleus formed on the 15th of June, 1878, with Major-General Winfield S. Hancock as its head, has grown beyond the meagre accommodations that can be furnished it on Governor's Island, and its members now seek to enlarge its sphere of action. This can only be done by transferring it to the borough of Manhattan.

For this purpose it is necessary to have funds, and the Institution has called upon its friends everywhere to assist in raising the sum of \$150,000, in order that its library and museum may be more accessible to the public of Greater New York, as well as to members who are visitors from all parts of the country and the world.

The plan of the Institution will include a lecture room,

where subjects of a military nature may be discussed ; where lectures upon great battles may be delivered and illustrated, and where improvements may be treated of theoretically by essays from well-known military authors.

The JOURNAL, published every two months, contains original prize and other essays on military subjects, military notes from every quarter of the globe, and selected articles from the very best of foreign military journals, which embrace exchanges from England, France, Germany, Belgium, Austria, Italy, India, Brazil, Buenos Ayres, and Mexico.

The affairs of the Institution are in the hands of an Executive Council, who guard its interests with the greatest care, while its head is represented at the present time by the General Commanding the Army.

A Board of Trustees, consisting of Lieut.-Gen. Jno. M. Schofield, Major-General Sickles, Major-General Ruger, Major-General Miles, Major-General Merritt, Brevet Major-General Webb, Major-General Greene, Hon. Daniel Lamont and Brevet Brig.-Gen. Daniel Appleton, has been elected by the Council to receive and keep the fund created for building purposes, and which is to be expended for no other purpose.

The occasion of a review of the 23d Regiment, N. G. of N. Y., by Major-General Miles, on the 31st of March, 1900, was taken advantage of by suggestion to present the gold medal awarded by the Institution to the successful essayist of 1899. It was the first time that a commanding officer of the army had ever visited Brooklyn to review one of her National Guard organizations, and it was the first time that a National Guard officer and a Brooklynite had ever received such an award from the Military Service Institution.

The officer in question was Col. Edward E. Britton, who, while a member of Gov. Black's staff, organized the One hundred and fourteenth Regiment for service during the Spanish-American War, and who was commissioned Colonel of the same. Col. Britton was for many years a member of the Twenty-third, and was a color-sergeant when he severed his connection with that organization.

Gen. Miles, in making the presentation, in behalf of the Institution named, to Colonel Britton, who, in full dress, State ser-

vice uniform, was escorted to a position on the big drill floor in front and centre of the regiment, paid the Colonel a high compliment and said some very flattering things to that officer. "It has been said," remarked the General, "that 'the pen is mightier than the sword,' but you have proved yourself equally proficient with both."

Colonel Britton, in accepting the medal, expressed the hope, in behalf of the citizen soldiery, that through appropriate Federal legislation, there will soon be a closer union between it and the Regular army, whose glorious achievements and magnificent organization have been and always will be a model and an object of the profoundest admiration. The presence on that occasion of the distinguished General commanding, he said, was an honor to the National Guard of this State, which will always remain in its grateful memory.

During the fall of 1899, Dr. Louis L. Seaman, of New York, (late Major-Surgeon 1st U. S. Vol. Engineers), presented the Institution with one hundred dollars in gold, for the purpose of bringing out theses on the subject of "The Ideal Ration for an Army in the Tropics." There were six competitors for this, and the award was unanimously made to Capt. E. L. Munson, Assistant-Surgeon U. S. Army. The thesis furnished by Captain Munson is published in the present number of the JOURNAL. The Board of Award consisted of Col. Jas. F. Weston, Acting Com. Gen. of Sub. ; Lieut.-Colonel Charles Smart, and Lieut.-Colonel Wm. E. Dougherty, 7th Infantry.

FUTURE OF THE NATIONAL GUARD.

We have been favored with a variety of suggestions as to the best method of reorganizing the National Guard with a view to making it an efficient national reserve ; but how are we ever to make any class of men efficient as a military force when they are organized in defiance of fundamental military principles ? And how are we to persuade young men in time of peace to render voluntary military service if it involves their submission to the rigorous discipline which makes the soldier ? We cannot have this when we permit men to elect their own officers, where we allow a man to become an officer without first subject-

ing him to years of preliminary military education and training in the duties of a soldier.

The Regular army is what it is, not because it is composed of more able or more intelligent men than those found in the National Guard, but because it is organized on correct military principles—those recognized the world over as such. It does not go as far as it should in submission to these, and to that extent it is deficient, and its efficiency will seriously decline if it is compelled to submit further to civilian ideas in military matters. It would disappear altogether if this submission were to go as far as it does in the National Guard.

In the Regular army men may come and go as they will, but so long as we retain a cadre of educated and well instructed soldiers the efficiency of the force continues. In the National Guard, on the contrary, the men are the controlling influence, and the standard for the officer, taking the body as a whole, is necessarily reduced to the level of a civilian's conception of a military man, and the kind and degree of discipline and instruction he is willing to receive. How can you make a military body out of such elements? That is the problem. How is it to be solved? Perhaps some of our correspondents can inform us. Thus far we have seen no plan which promised even the hope of a solution of the difficulty of organizing a body of men who shall be soldiers and at the same time civilians; having the civilians' notions of military obligations, military discipline, military training and government and sharing the general ignorance as to the conduct and care of men under the conditions of war.

Our recent experience of war has brought this obvious truth home to the consciousness of many intelligent and thoughtful officers of the National Guard, and they are beginning to have their doubts whether it will not be necessary to limit the rôle of the National Guard to that of a State constabulary, charged with keeping the peace within the boundaries of a State when ordinary civilian processes fail. It would be greatly to the advantage of the Regular army, and thus to the advantage of the country, if the State troops could take this uncongenial task off their shoulders. The efficient manner in which they have discharged it whenever called upon has brought down upon the

army the wrath of all the haters of order and their allies, and led them to combine their forces to cripple the Government by destroying its military arm. The navy is fortunately free from the prejudice thus created, and is, therefore, much more popular with Congress and the people.

We are quite disposed to listen to a plan for promoting the efficiency of the National Guard, whatever may be the part assigned to it, and to do what we can to make it successful, but we do not wish to be made a party to any scheme for blowing up an immense bubble of military efficiency which will collapse at the first prick. We are interested in making soldiers, and not officers who are soldiers only in appearance and pretensions. Our military responsibilities have become far too serious to admit of any trifling with titles and uniforms. We insist that they shall mean what they represent by whomsoever worn. We have had already quite too much of the Duchess of Gerolstein business in this country, and it would be criminal to encourage it in any way.

"When the devil was sick the devil a saint would be;
When the devil was well, the devil a saint was he."

Just now we are under the influence of war experience, and a sincere effort is being made to elevate the standard of the National Guard. But this will not survive beyond the recollections of recent experiences if the old system is continued. Now is the time to reorganize the National Guard on military lines. Can this be done? It is now or never.

Interfering with any solid and enduring reform is the popular misconception as to the character and influence of military training. It appears to be accepted as a settled proposition that military life is essentially and necessarily demoralizing, and the less we have of it the better; whereas, the exact converse is true. The immense strides that Germany especially has made of late years is largely due to the training her young men receive in the army. It is one of the greatest and most beneficial of educational processes, as human nature is, and with this opinion we do not doubt that every young man who returns home from even a brief experience of actual military training will agree.

The fact is, our country has been misled, and continues to be

misled, by Fourth of July theories, which never have any foundation in fact; which are contradicted, indeed, by our whole history. Read what Zogbaum says in *Harper's Magazine* for April in regard to the men of our army and navy, and you will understand what we mean. If training in physical endurance, in courage, in honor, in duty, in self-respect, in that comradeship which teaches a man to give his life for a friend and in a simple dependence upon the Supreme Being who holds the fate of men and of nations in His hands—if these things be demoralizing then is a military life demoralizing, and our young men do well to avoid it.—*Army and Navy Journal*.

CONFECTIONERY IN ARMY RATIONS.

The Germans about ten years ago introduced the use of candy into the diet of their soldiers. The idea was the outcome of experiments undertaken by the German government. It was demonstrated that the addition of candy and chocolate to the regular ration greatly conduced to the improvement of health and endurance of the troops, and at the present time the army authorities in Germany issue cakes of chocolate and a limited amount of other confectionery. The British were the next to follow this example, and the queen, as has been extensively advertised, forwarded five hundred thousand pounds of chocolate in half-pound packages as a Christmas treat for the soldiers in South Africa. Jam has also found great favor with the British War Office, and 1,450,000 pounds have been dispatched to South Africa as a four months' supply to 116,000 troops. The United States is following in the same path, and candy has been added to the regular army ration of the American soldier. It is stated that one New York firm has shipped more than fifty tons of confectionery during the past year for the armies in the Philippines, Cuba, and Porto Rico. The candy supplied is of excellent quality, consisting of mixed chocolate creams, lemon drops, cocoanut maroons, and acidulated fruit drops. These are packed in tins specially designed to fit the pockets of a uniform coat. The question of providing jam with the army ration is also under consideration.—*Medical Record*.

THE TRANSVAAL WAR. CAPTURE OF BLOEMFONTEIN.

Bloemfontein has been formally surrendered to Lord Roberts. In a telegram dated from that city, and dispatched at eight o'clock on Tuesday evening, the Commander-in-chief says that Mr. Fraser, a member of the "late" Executive Government, the Mayor, and other officials met him two miles from the town (presumably earlier on that day), and presented him with the keys of the public offices. Mr. Steyn, whom Lord Roberts describes as "late President of the Orange Free State," had vacated the presidency on Monday evening, and the British flag was hoisted over the building after the surrender. The troops, on making their entry, were cordially welcomed by the inhabitants. The enemy had withdrawn from the neighborhood, and all seemed quiet when the despatch was written.

An official announcement was made on Wednesday at Pretoria of the occupation of Bloemfontein by the British forces, with the additional notification that the seat of government had been transferred to Kroonstad.

The accounts from the southern frontier of the Orange Free State show that the Third Division, now encamped upon the south bank of the Orange River, is in readiness, awaiting the order to advance northwards. The Boers have managed to blow up the railway bridge at Bethulie, but the wagon bridge has been rescued, thanks to a gallant deed by the Sherwood Foresters, who, in the face of a hail of shot and shell, crossed the bridge unobserved and succeeded in cutting the connecting wires for firing the mines. Several boxes of dynamite were safely conveyed back to our camp. No further attempt to tamper with the bridge can be made, our artillery and Maxims now commanding the approaches from the north.

A dispatch from Bethulie Bridge Camp of Wednesday night states that General Clements' patrols have effected a junction with General Gatacre at Burgersdorp, and that a patrol on that day left Bethulie Camp for Aliwal North to join hands with General Brabant.

In Natal, Sir Charles Warren's Division is returning to the front. There is apparently a new move contemplated in that region, especially as 1000 additional troops have gone forward to join General Buller's army.

The Boers are reported to occupy a strong position at the junction of the Drakensberg and Biggarsberg ranges.—*Army and Navy Gazette*.

FITTING OUT OF THE TRANSPORT "SUMNER."

The House spent one entire afternoon discussing the furnishing of the transport *Sumner* last week. It was represented that no ocean liner, no yacht of a millionaire was so lavishly fitted out and that enough money had been spent on her to equip a dozen ordinary boats. The luxurious and costly furnishings extended even to the simplest articles. A device for boiling eggs cost \$50 and the plate-glass mirrors through which the officers surveyed themselves cost \$1500 each. The rugs were the most expensive that ever came out of Persia and the eye was greeted wherever it turned with magnificence most regal. Wherefore the representatives—particularly those from the agricultural districts—grew exceeding wroth, and demanded an investigation. It was even proposed and a bill introduced to transfer the transport service from the War to the Navy Department.

Meanwhile the Quartermaster General's office, which has the transport service in charge, was fuming and fretting at various inaccuracies in the account of the *Sumner's* furnishings and transmitted the following statement to the House:

1. The cost of the repairs to the transport *Sumner* at Erie basin, New York City, was not \$8000, but was \$1945.
2. The tumblers and water bottles in the staterooms were included in a sum total bid for all crockery, but can be bought at retail for 39 cents and \$1.25 respectively, the cost being much less of course purchased in the lot.
3. The linen on board is of good quality, but is not the best, the cost of the same being as follows: Tablecloths, 87 ½ cents a yard; napkins, 22 cents each; sheets, 47 ½ cents each; pillows, 14 cents each, and pillow slips, 14 ½ cents each.
4. The glass covers for the front doors of the staterooms cost 50 cents apiece, and is the ordinary frosted glass used in doors of such character.
5. The tables in the dining-room were made by the workmen at the Norfolk Navy Yard, and the exact cost is not known.

6. The chairs are the standard chairs used in all ocean-going steamers and cost \$20 instead of \$15. In this connection it would be advisable to call attention to the fact that all ships carrying passengers are fitted up with mahogany, simply because it stands the sea air better than any other woods; and while the original outlay is a little greater, it is the cheapest in the end, as it takes a great deal less labor to keep it polished and lasts much longer than other woods.

7. There are three mirrors in the sideboard, the total cost of the three being \$12.50, instead of \$1500. The large mirror at the head of the stairway cost \$35.

8. There is no silverware on board the ship. It is simply plated ware, and the total silver plate on board the ship costs \$1298.99, instead of \$8000, as stated, for the silverware on the sideboard alone.

9. The carpets are ordinary body Brussels carpets, and cost \$1.10 per yard. The rugs are the ordinary Smyrna rugs, and average \$10 each.

10. The entire plumbing aboard the ship, including everything, bath rooms, bath tubs, shower baths, washstands, all piping, and all fixtures for officers, soldiers and crew, cost but \$12,983.81. The average cost per bath room is \$354.96. Shower baths cost \$5 each. The washstands in the corner of the staterooms cost \$18. Nickel-plated brass is found to be the cheapest thing to use in this work, as it wears much better and costs less in labor to keep it in proper condition. The bath tubs cost, approximately, \$125 each, instead of \$200.

11. The automatic egg-boiler cost \$60, and with the large amount of cooking which is necessary to be done for the different messes is an essential and is not an absolutely or relatively costly article.

12. The flooring of all bath rooms, shower baths, butcher shops, kitchens, and other places which are continually covered with water, are of tile or a composition of cement, and cost 60 cents per square foot. You can readily see that this is the only kind of material that should be used in such places, as wood would rot and iron would rust.

13. Bunks are substituted instead of hammocks as used in the navy, as they permit of carrying more men, and they take

up less space and are more comfortable. These bunks cost \$6.50 per bed; the cost of the navy hammock, with pads and one-half standee, which would be necessary, averages \$6.63 per man.—*Marine Review*.

COST OF THE TRANSPORT SERVICE.

In response to an inquiry, the Secretary of War has transmitted to the Senate a statement of the expenditures of the army transports during and since the war with Spain. It shows that the total disbursements have aggregated \$25,789,100. Forty-nine vessels of various classes were purchased at a cost of \$8,074,455, and for refitting \$5,189,093 was disbursed. The vessels chartered numbered 128, the amount paid vessels for services on the Atlantic being \$2,882,284 and on the Pacific \$7,749,235, while \$1,891,342 was expended in fitting out the vessels and restoring them to former conditions at the end of their charters, making a total of \$12,525,861 for the chartered service. The total shows that the amount paid the owners of three steamships for service on the Pacific was greater than the valuation of the vessels. They were the *Zealandia*, which was appraised at \$250,000, and whose owners were paid \$313,666 under three separate charters; the *Indiana*, valued at \$450,000, and paid \$469,166; the *Ohio*, valued at \$450,000, and paid \$543,785.—*Marine Review*.

HOW BRITISH ARMY OFFICERS MAY RE-ENTER SERVICE.

A considerable number of officers have resigned their commissions for domestic or other reasons which did "not originate in any cause affecting honor, character, or professional efficiency," to quote the Queen's Regulations. That their services would be valuable in event of Great Britain being plunged in a European war cannot be doubted. They have given up soldiering as a profession, but surely none would hang back in case of national danger. To be able to assume his former position at a moment's notice an officer must keep in touch with things military, and must spend a reasonable time annually in drill and manœuvre. With this end in view he may join either the militia or volunteers. An officer who joins either force, however, finds himself saddled with considerable annual expense.

Thinking both these branches of the Reserve forces too expensive for a man of moderate means, let us suppose that the ex-officer decides to join the reserve of officers, hoping by this means to serve his country without a considerable outlay. He writes for information to the War Office, and is informed that should he join the reserve of officers he must be attached to Regulars for one month annually at his own expense. Under the present system a man of limited means, if he resign his commission in the Regular service, is practically debarred from returning to the colors as an officer, even in time of national emergency. Nor is the question of expense confined to the yearly training; a uniform has to be provided. Now it is commonly supposed that an officer who has served in the Regular army may, on joining the Reserve, wear his former uniform with the addition of "R" on the shoulder-strap. This applies to officers who have left the service under certain conditions, but not to subalterns who have voluntarily resigned their commissions. Thus an officer who has held the rank of lieutenant in a Highland regiment, for instance, would have the doubtful pleasure of supplying himself with an entire new kit before enjoying a month's training at his own expense.—*Army and Navy Gazette, England.*

BRITISH ARTILLERY IN SOUTH AFRICA.

The paucity of horse and field artillery guns with our commands now operating in South Africa has been brought to notice before in these columns, but the subject is one of such vital importance to the field forces at the front that no apology need be offered for again putting it prominently forward. The total number of British troops actually in South Africa at the date of writing, exclusive of garrison artillery, which forms no part of a field army, and also exclusive of the Army Service, Royal Army Medical, and Army Ordnance Corps, may be taken to be in round numbers 100,000. This force includes seven batteries of Royal Horse Artillery, having forty-two guns, and thirty-two batteries of Royal Field Artillery, having 192 guns, giving credit for the full number of guns in the 14th and 66th Batteries which were put out of action at Colenso, but may possibly have been reconstituted. The total number of guns is

therefore 234 for a force of 100,000 combatants, giving the proportion of about $2\frac{1}{3}$ guns to every 1000, or seven guns to every 3000 fighting men. The lowest recognized proportion is nine for that number of combatants, and the lowest proportion now generally advocated is twelve; that is, four per 1000, while some authorities on the subject go as high as five per 1000, having regard to the enormous difficulties now facing infantry in the attack of positions defended by magazine rifles and quick-firing guns, and the absolute necessity of keeping down the defenders' fire by as powerful an artillery as can be brought to bear on the points attacked. It will be seen that at the lowest proportion of three guns per 1000 combatants, there is an actual deficiency now at the front of sixty-six guns; and at the higher, and generally accepted proportion of four per 1000, the deficiency reaches the serious total of 166 guns, or nearly twenty-eight batteries. It is evident that the fresh batteries now being despatched to the seat of war will fail to satisfy requirements, since they will merely furnish guns for the additional troops going out.—*Army and Navy Gazette*.

A BILL TO DEFINE THE STATUS OF ACTING ASSISTANT SURGEONS IN THE ARMY.

Senator Platt, of New York, has introduced "A bill to issue warrants to acting assistant surgeons of the United States army who served as medical officers either in the late Civil War or the Spanish-American War or the Philippine rebellion." The bill provides "that all acting assistant surgeons of the United States navy who served as medical officers, agreeably to army regulations, either in the Civil War or the Spanish American War or the Philippine rebellion, and whose services were honorably terminated, and those acting assistant surgeons of the army who are still serving as medical officers, be issued warrants by the Secretary of War as acting assistant surgeons of the United States army in a similar manner with the warrants issued to the acting assistant surgeons of the United States navy by the Secretary of the Navy, the date of their warrants to be the date of their entry into the service of the United States as medical officers, and the date when their services as medical officers were or will be honorably terminated to be the

date of their discharges from the service of the United States: Provided, that no back pay or allowance be made to any such acting assistant surgeon by virtue of this act." Acting assistant surgeons in the navy are commissioned by the Secretary of the Navy, and this bill only provides for similar treatment of acting assistant surgeons in the army.—*Medical Record*.

CUBA.

The Military Service Institution has received the final report of Major General John R. Brooke, U. S. A., accompanied by a special report of the Secretary of Finance of the island of Cuba and three volumes of General Brooke's Civil Report as Military Governor of that island. From these reports we gather the fact that \$347,431.89 was the total amount of revenue collected during the period from January 1 to June 30, 1899, as follows:

Conveyance and inheritance tax.....	\$163,892.80
Some very few taxes on trade and commerce eventually collected by the State before their formal transfer to the municipalities.....	13,984.75
Ten per cent. tax on the rates of railroad and steamship passenger fares and three per cent. on the rates of railroad and coastwise steamship freight charges.	128,419.19
Excise tax also in very few cases collected by the State before transfer of same to the municipalities.....	5,840.99
Forest proceeds.....	120.00
Redemption of rent charges due the State.....	75.77
Interest of liabilities due the State.....	251.03
Interest of rent charges in favor of the State.....	5,078.55
Rents of State properties.....	3,209.13
Sale of useless material.....	637.93
Sundries, proceeds from hunting licenses, fines, etc.....	11,039.92
Eventual proceeds, as the duties collected in the customs of Nuevitas before American officers took charge.....	14,881.83
Total.....	\$347,431.89

The expenditure for the same period in which the Department of Finance has been directly concerned, is as follows:

Department of the Secretary of State and Government.....	\$ 97,892.53
Department of Justice and Public Instruction.....	258,432.85
Department of Finance.....	99,694.28
Department of Agriculture, Industry, Commerce and Public Works.....	91,145.74
Extra expenses.....	90,230.18
Total.....	\$637,393.68

ARMÉE ET MARINE.

One of the most important additions to our exchange list, and to which we invite the attention of the officers of the Army and Navy is the French publication of the above title. This is an illustrated weekly devoted exclusively to military and naval affairs, and to those who wish to keep alive their French technical study, it will prove of great assistance. It is published at No. 3 Place du Theatre Français, Paris, under the directorship of M. Jules de Cuverville.

Obituary.

General Z. B. Tower.

General Zealous B. Tower, U. S. A. (retired), died at Cohasset, March 21, 1900, aged 81 years. He was graduated from the Military Academy in 1841.

General Zealous Bates Tower, one of the ablest military engineers in this country, was born in Cohasset, Mass., January 12, 1819. He was graduated from West Point in 1841 at the head of his class, which numbered fifty-two.

After his graduation, Zealous B. Tower was soon appointed to a second lieutenancy in the Engineer Corps and in 1842 he became principal assistant professor of engineering at West Point. During the years 1843-46 he was engaged on the defenses of Hampton Roads. He served with great credit in the war with Mexico, where he led the storming column at Contreras. He was wounded at Chapultepec. In August, 1861, he was promoted to be major of engineers and assigned as chief engineer of the defense of Fort Pickens. For his conduct there he was appointed a brigadier general of volunteers on November 23, 1861, the date of the bombardment. He served in the operations in Northern Virginia under General Banks and General Pope until the second battle of Bull Run in 1862, where he was severely wounded. Upon his recovery, he served as superintendent of the United States Military Academy at West Point, rejoining the armies in the field as chief engineer of the defenses of Nashville, in September, 1864. After the battle of Nashville, in which he took part, he held responsible staff offices in the military divisions of Mississippi and Tennessee until the end of the war. In 1865 he was promoted to lieutenant colonel of engineers in the Regular army and he was mustered out of the volunteer service in 1866.

Thereafter General Tower was employed in the supervision of the work of improving the great harbors, both for commercial and military purposes, until January 13, 1874, when he received his promotion to colonel of engineers, and, having served more than forty years, was, at his own request, retired from active service. He received no less than eight brevets for "gallant and meritorious service" in war, including major general, U. S. A., 1865.

Announcement.

The Military Service Institution desires a few copies of the following numbers of the Journal. Nos. 1 to 5, and Nos. 11, 16, 21, 22, 31, 37, 50, 52, 53, 62, 71, 79, 82, 93, 96 and 99.

Will the Members who have any of these numbers to dispose of, please communicate with the Secretary, Governor's Island, New York City.

Acknowledgments.

Military.

Armée et Marine; regular issues for March and April, 1900; Paris.

Army and Navy Gazette; regular issues for March and April, 1900; London.

Army and Navy Journal; regular issues for March and April, 1900; New York.

El Boletín Militar; regular issues for March and April, 1900; City of Mexico.

International Revue über die Gesamten Armeen und Flotten for March and April, 1900; Dresden.

Journal of the United Service of India for January, 1900; Simla, India.

Journal of the Royal United Service Institution for January and February, 1900; London.

Journal of the U. S. Artillery for March and April, 1900; Fort Monroe, Va.

La Belgique Militaire; regular issues for March and April, 1900; Brussels.

La Revue Technique; regular issues for March and April, 1900; Paris.

Revue d'Artillerie for March, 1900; Paris.

Revue de L'Armée Belge for January and February, 1900; Liege.

Revue Militaire de L'Etranger for February and March, 1900; Paris.

Revue du Cercle Militaire; regular issues for March and April, 1900; Paris.

Rivista di Artiglieria e Genio for February, 1900; Rome, Italy.

Revista Militar for January, 1900; Rio de Janeiro, Brazil.

Roster of the Veteran Corps of Artillery for 1900; from the Adjutant's and Secretary's office, 27 William Street, New York.

Roster of Officers on Duty at Headquarters Division at Cuba; April, 1900; Havana.

Seventh Regiment Gazette for March and April, 1900; New York.

United Service Gazette; regular issues for March and April, 1900; London.

United Service Magazine for March and April, 1900; London.

Naval.

Boletín del Centro Naval for January and February, 1900; Buenos Ayres.

Marine Review; regular issues for March and April, 1900; Cleveland, O.

Nautical Gazette for March and April, 1900; New York.

Revista Marítima Brasileira for January and February, 1900; Rio de Janeiro.

Miscellaneous.

Appleton's Popular Science Monthly for March and April, 1900; New York.

American Journal of Mathematics for February, 1900; The Johns Hopkins Press; Baltimore.

American Monthly Review of Reviews for March and April, 1900; New York.

Bulletin of the American Geographical Society, Vol. XXXII; New York.

Book Reviews for March and April, 1900; New York (Macmillan & Co.).

Current Literature for March and April, 1900; New York.

Cosmopolitan for March and April, 1900; New York.

The Century Magazine for March and April, 1900; New York.

Journal of the Western Society of Engineers for February, 1900; Chicago.

La Ingenieria for February 15, 1900; Buenos Ayres.

La Revue Canadienne for February, 1900; Montreal.

Monthly Weather Review for February and March, 1900; Washington, D. C.

Medical Record; regular issues for March and April, 1900; New York.

Memoir of Col. Alex. Biddle, by Henry Clay Baird; read before the American Philosophical Society, October 20, 1899.

Official Gazette of the U. S. Patent Office; regular issues for March and April, 1900; New York.

Proceedings of the American Society of Engineers for March, 1900; New York.

Political Science Quarterly for March, 1900; Ginn & Co., Boston.

Syracuse University Catalogue, 1899-1900; from Chancellor Day, Syracuse, N. Y.

Suggestive Therapeutics, for April, 1900; Psychic Research Co.; Chicago, Ill.

Scientific American; regular issues for March and April, 1900; New York.

St. Nicholas for March and April, 1900.

Illustrated Catalogue of the A. E. Brooks Collection of Antiquities, 1900; Hartford, Conn.

We have also received from Wm. Clowes & Sons, Publishers, the third edition of the Boer War, 1899-1900, with a chart, showing organization and distribution. A most valuable book for reference on the subject of which it treats.

A handy little book of reference is that compiled by Captain Wm. R. Hamilton, 7th Artillery, which he designates as a *Manual of U. S. Army, Navy and Marine Corps*, being a list of Retirements from 1900 to 1935, inclusive.



Prize Essay—1900.

I.—The following Resolution of Council is published for the information of all concerned :

Resolved, That a Prize of a Gold Medal, together with \$100 and a Certificate of Life Membership, be offered annually by THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES for the best essay on a military topic of current interest, the subject to be selected by the Executive Council, and \$50 to the first honorably mentioned essay. The Prizes will be awarded under the following conditions :

1. Competition to be open to all persons eligible to membership.
2. Each competitor shall send three copies of his Essay in a sealed envelope to the Secretary *on or before January 1, 1901*. The Essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the Essay, followed by a figure corresponding with the number of pages of MS.; a sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, should accompany the Essay. This envelope to be opened in the presence of the Council after the decision of the Board of Award has been received.
3. The prize shall be awarded upon the recommendation of a Board consisting of three suitable persons chosen by the Executive Council, who will be requested to designate *the Essay deemed worthy of the prize*; and also in their order of merit those deserving of honorable mention.
In determining the essay worthy of the prize, the Board will be requested to consider its professional excellence, usefulness and valuable originality, as of the first importance, and its literary merit as of the second importance. Should members of the Board determine that no essay is worthy of the prize, they may designate one or more essays simply as of honorable mention; in either case, they will be requested to designate one essay as first honorable mention. Should the Board deem proper, it may recommend neither prize nor honorable mention. Should it be so desired, the recommendation of individual members will be considered as confidential by the Council.
4. The successful Essay shall be published in the Journal of the Institution, and the Essays deemed worthy of honorable mention shall be read before the Institution, or published, at the discretion of the Council.
5. Essays must not exceed twenty thousand words, or fifty pages of the size and style of the JOURNAL (exclusive of tables).

II.—The Subject selected by the Council at a meeting held November 11, 1899, for the Prize Essay of 1900, is
"THE ORGANIZATION OF A STAFF BEST ADAPTED
FOR THE UNITED STATES ARMY."

III.—The gentlemen chosen by the Council to constitute the Board of Award for the year 1900 are :

LIEUT. GENERAL JOHN M. SCHOFIELD, U. S. A.
BRIG. GENERAL JAS. H. WILSON, U. S. V.
PROF. G. J. FIEBEGGER, U. S. MILITARY ACADEMY.

GOVERNOR'S ISLAND, N. Y.
May, 1900.

WM. H. POWELL,
Secretary.

The Military Service Institution.

President.

Major-General NELSON A. MILES, U. S. Army.

Resident Vice-Presidents.

Major-General WESLEY MERRITT, U. S. A.

Bvt. Brig.-Gen. T. F. RODENBROUGH, U. S. A.

Secretary.

Col. WM. H. POWELL, U. S. A.

Treasurer.

Col. C. A. WOODRUFF, Sub. Dept.

Asst. Secretary.

Vacancy.

Vice-Treasurer.

Vacancy.

Executive Council.

Term ending 1905.

CORNISH, GEO. A., Major 15th Inf.
MILLS, A. L. Col., Supt. Mil. Academy.
REBER, SAMUEL, Capt. Signal Corps, U.S.A.
SHERIDAN, M. V., Col. Adj. Gen'l's Dept.
STORY, J. P., Major 7th U. S. Artillery.
WEBB, A. S., Bvt. Major-General (late) U. S. A.

Term ending 1903.

BUTLER, J. G., Major Ord. Dept.
FIRBEEGER, G. J., Prof. U. S. Mil. Academy.
GILLESPIE, GEO. L., Colonel Corps Engineers.
VROOM, P. D., Lieut. Col. I. G. Dept.
WILSON, C. I., Col. Pay Dept.
BYRNE, C. C., Col. Med. Dept.

Term ending 1901.

Finance Committee.

GEN. BARRIGER.
COL. POWELL.
Major BUTLER.

BARRIGER, J. W. Bvt. B.-G. U. S. A.
CLOUS, J. W., Lieut.-Col. J. A. Dept.
HEIN, OTTO L., Lieut.-Col.
BREWERTON, H. F., Major U. S. A.
KNIGHT, J. G. D., Major Corps Engineers.
MOORE, JAS. M., Col. Q. M. Dept.
APPLETON, DANIEL, Col. 7th Regt., N.G., N.Y.

Library Committee.

Major BUTLER.
Major KNIGHT.
Capt. REBER.

Publication Committee.

Colonels POWELL and CLOUS, Major KNIGHT and Capt. REBER.

Branches

are established at West Point, Fort Leavenworth and Vancouver Barracks.

Membership dates from the first day of the calendar year in which the "application" is made, unless such application is made after October 1st, when the membership dates from the first day of the next calendar year.

Initiation fee and dues for first year \$2.50, the same amount for five years subsequently. After that two dollars per year. This includes the Journal.

NOTE.—Checks and Money Orders should be drawn to order of, and addressed to, "The Treasurer Military Service Institution," Governor's Island, New York Harbor. Yearly dues include Journal.

Changes of address should be reported promptly.

